

THE
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ART. I.—*Biographical Notice of David Rittenhouse.*

DURING the progress of this work, we have presented our readers, with a series of biographical sketches of many of the most distinguished American warriors and statesmen. In the present number, we introduce an American philosopher, and one who has honoured our country, equally by his genius and his virtues. In the active operations of war and of government, it is comparatively easy, for a man of talents, to place himself in a prominent point of view, and to command the notice of his fellow-citizens. But how few are the men of science, who have been able, by the quiet labours of the closet, thus to attract the public attention: in our own country, alas, how very few!

The first of the ancestors of Dr. Rittenhouse, of whom we have any certain information, was his grandfather Nicholas Rittenhouse, who migrated from Holland to New York, about the year 1690, and soon afterwards, removed with his family to the neighbourhood of Germantown, about eight miles from Philadelphia; where he had the merit of establishing the first paper-mill, ever erected in America. Matthias, the youngest son of this respectable man, was the father of our philosopher. He was born at the paper-mills, in the year 1703, and continued there until he was 29 years of age; when, in consequence of his father's death, he abandoned the occupation of a paper-maker, removed to a piece of land which he had purchased in the township of Norriton, about twenty miles from Philadelphia, and commenced the business of a farmer. About three years prior to this removal, he married Elizabeth Williams, who was born in 1704, and was the daughter of Evan Williams, a native of Wales. By this wife, he had four sons and six daughters. The three eldest of the children were born at the place of their father's nativity, the others at Norriton. Of the former number, was *David*, the eldest son, and the subject of the present biography, who was born on the eighth day of April, 1732.

The early part of the life of Dr. Rittenhouse was spent in agricultural employments, under the direction of his father. Yet, even amid the obscurity of these humble labours, proofs of his peculiar genius were not wanting. His younger brother, Benjamin, has re-

lated, that, while David was employed in the fields, he repeatedly observed the fences, and even the plough with which he had been working, marked over with mathematical figures. The construction of a wooden clock exhibited the first evidence of his mechanical talents. He was then but seventeen years of age, and had never received any instructions either in mathematics or mechanics. As the delicacy of his constitution and the irresistible impulse of his genius unfitted him for the labours of husbandry, his parents, soon after this period, consented to his abandoning this employment, and procured for him the necessary tools for the business of a clock and mathematical instrument maker, which he then adopted as his profession.

From the age of eighteen to twenty-five, Mr. Rittenhouse applied himself with the greatest assiduity, both to his trade and to his studies. Engaged throughout the day in his attention to the former, it was only the time commonly assigned to rest, or, to use his own expression, *his idle hours*, that he could devote to the latter. Yet his success was astonishing. With so little time at his command, with but two or three books, and without the least instruction, he acquired so considerable a knowledge of the mathematical sciences, as to be able to read the *Principia* of sir Isaac Newton. It is even asserted, that, by the force of his own profound meditations, he was enabled to discover the method of fluxions; and that he did not know, until some years afterwards, that two of the greatest philosophers of Europe, Newton and Leibnitz, had contested the honour of an invention, of which he had once believed himself the author.

It was during this double employment of his time, in labour and in study, that Mr. Rittenhouse planned and executed an instrument, in which his mathematical knowledge and his mechanical skill were equally required. This instrument was the ORRERY. Machines intended to give to the student of astronomy a general conception of the relative motions of the heavenly bodies had been constructed before: but this was not the object contemplated by Mr. Rittenhouse. The great mechanical problem which he proposed to solve, was infinitely more difficult and more worthy of his ambition. It was to construct an instrument, by means of which he could exhibit, *with accuracy*, the positions of the planets and their satellites at any given period of the world *past, present or future*. It was, in fact, to make a kind of perpetual astronomical almanac, in which the results, instead of being given in tables, were to be actually exhibited to the eye. In this noble attempt, he succeeded. Two of these orreries were made by his own hands. One belongs to the university of Pennsylvania, the other to the college of New Jersey.

Every person, at all acquainted with astronomy, has heard of the transit of Venus over the sun's disk, which happened on the third of June, 1769, and has been made acquainted with the very great importance of this phenomenon. In order to observe so rare

and interesting an occurrence, the American Philosophical Society appointed a committee, of which Mr. Rittenhouse was a member, and directed a temporary observatory to be erected near his residence, in Norriton township. Of the part which Mr. Rittenhouse acted in these preparations, and of the high character which he already bore, we may judge by the following extract from a communication made to the society, by Dr. Smith, who was also a member of the astronomical committee. ‘As Mr. Rittenhouse’s dwelling (says the Dr.) is about twenty miles northwest of Philadelphia, our other engagements did not permit Mr. Lukens or myself to pay much attention to the necessary preparations; but we knew we had intrusted them to a gentleman on the spot (meaning Mr. Rittenhouse) who had, joined to a complete skill in mechanics, so extensive an astronomical and mathematical knowledge, that the use, management, and even construction of the apparatus were perfectly familiar to him. The laudable pains he had taken in these material articles, will best appear from the work itself, which he hath committed into my hands, with a modest introduction, giving me a liberty with them, which his own accuracy, taste and abilities leave no room to exercise.’ ‘We are naturally led here,’ says an eloquent eulogist of Mr. Rittenhouse,* ‘to take a view of our philosopher, with his associates, in their preparations to observe a phenomenon, which had never been seen but twice before, by any inhabitant of our earth, which would never be seen again by any person then living, and on which depended very important astronomical consequences. The night before the long expected day was probably passed in a degree of solicitude which precluded sleep. How great must have been their joy when they beheld the morning sun, and “the whole horizon without a cloud,” for such is the description of the day, given by Mr. Rittenhouse, in the report referred to by Dr. Smith. In pensive silence and trembling anxiety, they waited for the predicted moment of observation: it came; and brought with it all that had been wished for and expected by those who saw it. In our philosopher, it excited, in the instant of one of the contacts of the planet with the sun, an emotion of delight so exquisite and powerful, as to induce fainting. This will readily be believed by those, who have known the extent of that pleasure, which attends the discovery or first perception of truth.’

On the ninth of November, of the same year, there was likewise a transit of Mercury over the sun, which was observed at Norriton, by the same committee. A detailed history of these observations, as well as of those also made under the auspices of the American Philosophical Society, at Philadelphia and Cape Henlopen, is contained in the first volume of their Transactions. The celebrated astronomer royal, Dr. Maskelyne, has declared,†

* Dr. Benjamin Rush.

† In a letter to the Hon. T. Penn, proprietary of the then province of Pennsylvania.

that 'the Pennsylvania observations of the transit were excellent and complete, and did honour to the gentlemen who made them, and to those who had promoted the undertaking.'

The reputation which Mr. Rittenhouse had now so justly acquired, as an astronomer, attracted the attention of the government, and he was employed in several geodesic operations, of great public importance.

In the year 1779, he was appointed, by the legislature of Pennsylvania, one of the commissioners for adjusting a territorial dispute, between that state and Virginia; and the success of this commission is ascribed, in a great degree, to his skill and prudence.

In 1786, he was employed in fixing the northern line, which divides Pennsylvania from New York.

In 1769, he was employed in settling the limits between New Jersey and New York; and, in 1787, he was called upon to assist in fixing a boundary line between the states of Massachusetts and New York.

Let us call upon those, who are in the habit of considering the pursuits of the philosopher as barren and useless, to cast their eyes once more over this list of labours; and then say, whether they were not of indispensable practical importance, and whether any thing but *science* could have accomplished them.

The literary honours, which the grateful votaries of science so gladly confer upon successful genius, were lavished upon Mr. Rittenhouse. In 1768, the degree of master of arts was conferred upon him by the college of Philadelphia. The same degree was also conferred by the college of William and Mary, in Virginia, in 1784. In the year 1789, he received the degree of doctor of laws, from the college of New Jersey. He was elected a member of the American Academy of Arts and Sciences, at Boston, in 1782, and of the Royal Society of London, in 1795.

In the year 1791, he was chosen the successor of Dr. Franklin, in the presidency of the American Philosophical Society, the most elevated station that science can confer in our country. The connexion of Dr. Rittenhouse with this society, was certainly important both to him and to them. All his philosophical communications were made through the medium of their transactions; and the following list of his papers, printed in the three first volumes, will show his zeal for science, and the fertility of his genius.

Observations of the comet which appeared in June and July 1770, with the elements of its motion, and trajectory of its path; in a letter to Dr. William Smith.

An easy method of deducing the true time of the Sun's passing the meridian, by means of a clock, from a comparison of four equal altitudes, observed on two succeeding days, without the help of the equation tables; communicated by Dr. Wm. Smith.

An explanation of an optical deception; namely, that the surfaces of bodies, viewed through the double microscope, sometimes appear

to be reversed, that is, those parts which are elevated seem depressed, and the contrary.

An account of a remarkable meteor, observed at Philadelphia, on the 31st of October, 1775; with some conjectures relative to the theory of meteors; in answer to a letter from John Page, Esq., giving an account of the same meteor, seen in many distant places in Virginia.

Conjectures, corroborated by experiments, relative to a new theory of magnetism; in a letter to John Page, Esq., of Virginia.

A new method of placing a meridian mark for a transit instrument, within a few feet of the observatory, so as to have all the advantages of one placed at a great distance; in a letter to the Rev. Dr. John Ewing.

Observations on a comet discovered in the month of January, 1784.

An explanation of a curious optical phenomenon; namely, if a candle or other luminous body be viewed through a silk umbrella, handkerchief or the like, the luminous body will appear to be doubled; in a letter to Francis Hopkinson, Esq.

A series of observations, made at sundry times, in the years 1784, 85, and 86, on the new planet, or Georgium Sidus, also an observation of the transit of Mercury over the sun's disk, on the twelfth of November, 1782.

An account of three houses in Philadelphia, struck with lightning, on the seventh of June, 1789.

An account of the effects of a stroke of lightning upon a house furnished with two metallic conductors, on the seventeenth of August, 1789; in a letter to Mr. Robert Patterson.

Astronomical observations made at Philadelphia; containing an account of the eclipse of the moon, on the second of November, 1789.

An account of the transit of Mercury over the Sun's disk on the fifth of November, 1789.

An account of the eclipse of the Sun, on the sixth of November, 1790, with an account of corresponding observations made at the university of William and Mary, in Virginia, by Dr. J. Madison, and at Washington college in Maryland, by the Rev. Dr. Smith.

Short and elegant theorems for finding the sum of the several powers of the sines, either to a radius of unity, or any other; in a letter to Mr. Robert Patterson.

An account of a comet discovered in the month of January, 1793; in a letter to Mr. Robert Patterson.

A method of determining the true plane of a planet in an elliptical form, by converging series, directly from the mean anomaly.

A new and easy method of calculating logarithms; in a letter to Mr. Robert Patterson.

A description of an improvement on pendulum-clocks; by which the error arising from the different density or resistance of the medium in which the pendulum vibrates, is effectually obviated.

Lastly, Experiments on the expansion of wood by heat.

Besides these productions of our celebrated philosopher, we have an oration, on the subject of astronomy, which he delivered before the Philosophical Society, by their appointment, in the year 1775. It is said to have commanded, by its intrinsic excellence, universal admiration and applause, although delivered with a feeble voice, and without any of the advantages of elocution. The dedication is remarkable.—‘To the Delegates of the thirteen United Colonies, assembled in congress at Philadelphia, to whom the future liberties, and consequently the virtue, improvement in science, and happiness of America are intrusted, the following oration is inscribed and dedicated, by their most obedient and humble servant, the Author.’

As we believe that nothing can give a more accurate portrait of a man’s mind, than the style in which he expresses his ideas, we hope the following extracts from Dr. Rittenhouse’s oration will not be considered foreign to his biography.

After speaking of the false impressions of the solar system, made on the mind, by appearances, uncorrected by science, he introduces this elegant and instructive passage:

‘How does Astronomy change the scene!—Take the miser from the earth, if it be possible to disengage him; he whose nightly rest has been long broken by the loss of a single foot of it, useless perhaps to him; and remove him to the planet Mars, one of the least distant from us: Persuade the ambitious monarch to accompany him, who has sacrificed the lives of thousands of his subjects to an imaginary property in certain small portions of the earth; and now point it out to them, with all its kingdoms and wealth, a glittering star “close by the moon,” the latter scarce visible and the former less bright than our Evening Star:—Would they not turn away their disgusted sight from it, as not thinking it worth their smallest attention, and look for consolation in the gloomy regions of Mars?’

‘But dropping the company of all those, whether kings or misers, whose minds and bodies are equally affected by gravitation, let us proceed to the orb of Jupiter; the Earth and all the inferior planets will vanish, lost in the sun’s bright rays, and Saturn only remain: He too sometimes so diminished in lustre, as not to be easily discovered. But a new and beautiful system will arise. The four moons of Jupiter will become very conspicuous; some of them perhaps appearing larger, others smaller than our moon; and all of them performing their revolutions with incredible swiftness, and the most beautiful regularity:—varying their phases from full to new and from new to full, and frequently eclipsing the sun and each other, at least to the equatorial parts of Jupiter; and almost in every revolution suffering eclipses themselves by falling into Jupiter’s shadow; excepting that the outermost will seem, like a traveller fond of the sun-beams, cautiously to avoid the shadow for whole years together. Since we are advanced so far, if not tired of the journey, let us proceed a step further; it is but 400 millions of miles to the globe of Saturn. Here again all will be lost, but Jupiter itself. The Sun will put on something of a starlike appearance, but with excessive brightness. The five satellites of Saturn

will exhibit appearances similar to those of Jupiter, but they will very rarely eclipse the Sun, or suffer eclipses themselves. The particular phenomena of Saturn's ring, we cannot explain, unless we knew the time and plane of Saturn's revolution on his axis. But this we know, that it must sometimes appear, by night, like a prodigious luminous arch, almost equal to one quarter of the heavens; and at other times, dark, so as to afford no light itself, but to intercept the light of every star beyond it, by night, and of the sun itself by day. And to conclude, if borne on the wings of a comet we should travel with it to the remotest part of its orbit; our whole planetary system would disappear, and the sun become a star, only more refulgent than Sirius perhaps, because less distant.'

Those who have read, and consequently admired, the eloquent 'Discourses on the Christian Revelation, viewed in connexion with the Modern Astronomy,' by Dr. Chalmers, of Glasgow, will be pleased to meet with the following extract on the same subject, from the oration of Dr. Rittenhouse.

'The opinion of the earth's rotation on its axis was once violently opposed, from a notion of its dangerous tendency with respect to the interests of religion. But, as truth is always consistent with itself, so many new proofs were furnished from time to time by new discoveries, that a mistaken interpretation of some passages in the Bible was compelled to give way to the force of astronomical evidence. The doctrine of a plurality of worlds, is inseparable from the principles of Astronomy; but this doctrine is still thought, by some pious persons, and by many more I fear, who do not deserve that title, to militate against the truths asserted by the christian religion. If I may be allowed to give my opinion on a matter of such importance, I must confess that I think upon a proper examination the apparent inconsistency will vanish. Our religion teaches us what philosophy could not have taught; and we ought to admire with reverence the great things it has pleased Divine Providence to perform, *beyond the ordinary course of nature*, for man, who is undoubtedly the most noble inhabitant of this globe. But neither religion nor philosophy forbids us to believe that infinite wisdom and power, prompted by infinite goodness, may throughout the vast extent of creation and duration, have frequently interposed in a manner quite incomprehensible to us, when it became necessary to the happiness of created beings of some other rank or degree.

'How far indeed the inhabitants of the other planets may resemble man, we cannot pretend to say. If like him they were created liable to fall, yet some, if not all of them, may still retain their original rectitude. We will hope they do: the thought is comfortable.—Cease, Galileo, to improve thy optic tube: and thou, great Newton, forbear thy ardent search into the distant mysteries of nature: lest ye make unwelcome discoveries. Deprive us not of the pleasure of believing that yonder radiant orbs, traversing in silent majesty the ethereal regions, are the peaceful seats of innocence and bliss: where neither natural nor moral evil has ever yet intruded; where to enjoy with gratitude and adoration the creator's bounty, is the business of existence.'

Dr. Rittenhouse, in continuing this view, now gives it a political direction.

‘ If their inhabitants resemble man in their faculties and affections, let us suppose that they are wise enough to govern themselves according to the dictates of that reason their Creator has given them, in such manner as to consult their own and each other’s true happiness, on all occasions. But if, on the contrary, they have found it necessary to erect artificial fabrics of government, let us not suppose that they have done it with so little skill, and at such an enormous expense, as must render them a misfortune instead of a blessing. We will hope that their statesmen are patriots, and that their kings, if that order of beings have found admittance there, have the feelings of humanity.—Happy people! and perhaps more happy still, that all communication with us is denied. We have neither corrupted you with our vices, nor injured you by violence. None of your sons and daughters, degraded from their native dignity, have been doomed to endless slavery by us in America, merely because *their* bodies may be disposed to reflect or absorb the rays of light, in a way different from *ours*. Even you, inhabitants of the moon, situated in our very neighbourhood, are effectually secured, alike from the rapacious hand of the haughty Spaniard, and of the unfeeling British nabob. Even British thunder impelled by British thirst for gain, cannot reach you: And the utmost efforts of the mighty Frederick, that tyrant of the north and scourge of mankind, if aimed to disturb *your* peace, become inconceivably ridiculous and impotent. Pardon these reflections. They rise not from the gloomy spirit of misanthropy. That being, before whose piercing eye all the intricate foldings and dark recesses of the human heart become expanded and illuminated, is my witness, with what sincerity, with what ardour, I wish for the happiness of the whole race of mankind: how much I admire that disposition of lands and seas, which affords a communication between distant regions, and a mutual exchange of benefits: how sincerely I approve of those social refinements which really add to our happiness; and induce us with gratitude to acknowledge our great Creator’s goodness:—how I delight in a participation of the discoveries made from time to time in nature’s works, by our philosophic brethren in Europe. But when I consider, that Luxury and her constant follower Tyranny, who have long since laid in the dust, never to rise again, the glories of Asia, are now advancing like a torrent irresistible, whose weight no human force can stem, and have nearly completed their conquest of Europe; Luxury and Tyranny, who by a vile affectation of virtues they know not, pretend at first to be the patrons of science and philosophy, but at length fail not effectually to destroy them; agitated I say by these reflections, I am ready to wish—vain wish! that nature would raise her everlasting bars between the new and old world; and make a voyage to Europe as impracticable as one to the moon.’

We continue our extracts:—

‘ How agreeable the task to dwell on the praises of Astronomy: to consider its happy effects as a science, on the human mind. Let the sceptical writers forbear to lavish encomiums on their cobweb philosophy, liable to be broken by the smallest incident in nature. They tell us it is of great service to mankind, in banishing bigotry and superstition from amongst us. Is not this effectually done by Astronomy? The direct tendency of this science is to dilate the heart with universal benevolence, and to enlarge its views. But then it does this without

propagating a single point of doctrine contrary to common sense, or the most cultivated reason. It flatters no fashionable princely vice, or national depravity. It encourages not the libertine by relaxing any of the precepts of morality; nor does it attempt to undermine the foundations of religion. It denies none of those attributes, which the wisest and best of mankind, have in all ages ascribed to the Deity. Nor does it degrade the human mind from that dignity, which is ever necessary to make it contemplate *itself* with complacency. None of these things does Astronomy pretend to; and if these things merit the name of Philosophy, and the encouragement of a people, then let scepticism flourish, and Astronomy lie neglected; then let the names of Berkely and Hume, become immortal, and that of Newton be lost in oblivion.'

Again:—

'If we consider that infinite variety which obtains in those parts of nature with which we are most intimate: how one order of most curiously organized bodies, infinitely diversified in other respects, all agree in being fixed to the earth, and receiving nourishment from thence: how another order have spontaneous motion, and seek their food on different parts of the earth, whilst by gravity they are confined to its surface, but in other respects diversified like the former: how a *third* float in, and below the surface of, a dense fluid, of equal weight with their bodies, which would soon prove fatal to both the others: and a *fourth* consisting of a vast variety too, have this property in common, that by a peculiar mechanism of their bodies, they can soar to great heights above the earth, and quickly transport themselves to distant regions in a fluid so rare as to be scarcely sensible to us: but not to pursue this boundless subject any further, I say, when we consider this great variety so obvious on *our* globe, and ever connected by some degree of uniformity, we shall find sufficient reason to conclude, that the visible creation, consisting of revolving worlds and central suns, even including all those that are beyond the reach of human eye and telescope, is but an inconsiderable part of the whole. Many other and very various orders of things unknown to, and inconceivable by us, may, and probably do exist, in the unlimited regions of space. And all yonder stars innumerable, with their dependencies, may perhaps compose but the leaf of a flower in the Creator's garden, or a single pillar in the immense building of the Divine Architect. If it shall please that Almighty Power who hath placed us in a world, wherein we are only permitted "to look about us and to die;" should it please him to indulge us with existence throughout that half of eternity which still remains unspent; and to conduct us through the several stages of his works; here is ample provision made for employing every faculty of the human mind, even allowing its powers to be constantly enlarged through an endless repetition of ages. Let us not complain of the vanity of this world, that there is nothing in it capable of satisfying us: happy in those wants, happy in those restless desires, for ever in succession to be gratified; happy in a continual approach to the Deity. I must confess that I am not one of those sanguine spirits who seem to think, that when the withered hand of Death hath drawn up the curtain of eternity, almost all distance between the creature and creator, between finite and infinite, will be annihilated. Every enlarge-

ment of our faculties, every new happiness conferred upon us, every step we advance towards the perfection of the Divinity, will very probably render us more and more sensible of his inexhaustible stores of communicable bliss, and of his inaccessible perfections.'

We have already mentioned the important services which Dr. Rittenhouse was enabled to render to the state, by his skill in astronomy; his labours for the public, were not, however, confined to this department alone. In 1777, he was appointed Treasurer of Pennsylvania; and he was continued in this office, by an annual and unanimous vote of the legislature, until the year 1789.

It is perhaps to be lamented, that so much of his important time should have been spent in the drudgery of such an office. The following extract of a letter from his friend Mr. Jefferson, written in 1778, will give the opinion of that distinguished statesman on this subject.

'Writing to a philosopher, I may hope to be pardoned for intruding some thoughts of my own, though they relate to him personally. Your time for two years past has, I believe, been principally employed in the civil government of your country. Though I have been aware of the authority our cause would acquire with the world from its being known that yourself and doctor Franklin were zealous friends to it, and am myself duly impressed with a sense of the arduousness of government, and the obligation those are under who are able to conduct it; yet I am also satisfied there is an order of geniuses above that obligation, and therefore exempted from it. Nobody can conceive that nature ever intended to throw away a Newton upon the occupations of a crown. It would have been a prodigality for which even the conduct of Providence might have been arraigned, had he been by birth annexed to what was so far below him. Co-operating with nature in her ordinary economy, we should dispose of and employ the geniuses of men according to their several orders and degrees. I doubt not there are in your country many persons equal to the task of conducting government: but you should consider that the world has but one Rittenhouse, and that it never had one before.'

In the year 1792, he was appointed, by the general government, to the office of director of the Mint of the United States. This was a more congenial and appropriate employment; and had been rendered honourable by being the employment of Newton. It is well known that Dr. Rittenhouse's mechanical skill rendered him a highly useful officer. His want of health obliged him to resign in 1795.

If from these public walks, we follow him into his retirement, we shall find there all the mild and amiable virtues of domestic life. He was a husband, a father, and a friend; and, in every relation, was a model of excellence.

His constitution, naturally feeble, had been rendered still more so, by sedentary labour, and midnight studies; and on the twenty-sixth of June, 1796, death terminated his career. His last illness was short and painful, but his patience, and his benevolence did not

forsake him. 'Upon being told that some of his friends had called at his door to inquire how he was, he asked why they were not invited into his chamber to see him.—Because, said his wife, you are too weak to speak to them.—Yes, said he, that is true, *but still I could have pressed their hands.*'*

Immediately after his death, the American Philosophical Society decreed him the honour of a public eulogium, and this duty was executed in the ablest manner, by the celebrated Dr. Rush. In 1813, a large volume of memoirs of his life was published by his relative, William Barton, Esq. of Lancaster, and although this work is liable to the reproach of being greatly surcharged with erudition extraneous to its object, it is written with much elegance, and forms altogether a very valuable body of information. It is from these sources that we obtained the materials for the foregoing outline.

ART. II.—*Travels in Canada and the United States in 1816 and 1817.* By Lieutenant Francis Hall, 14th Light Dragoons H. P. London 1818. pp. 543.

THIS, if not an entertaining, is at least a very inoffensive volume. And even that moderate encomium, unfortunately, is no common praise when applied to a book of travels through our country, published by an Englishman and in England.

It is a good humoured narrative of the principal incidents in a voyage across the Atlantic, and a journey through a great part of Canada and the United States, composed in a plain familiar style, and much more remarkable for the candour and good temper which it evinces, than for either originality or profundity of observation.

Lieutenant Hall, it seems, arrived at New York from Liverpool early in the spring of 1816, and after devoting the short and apparently inadequate space of five days to an examination of that city, commenced an extremely arduous tour, whether incited by curiosity merely, or by any more worldly motive, he does not inform us. His five days in New York must however have been most actively employed, if we may judge from the variety of objects that he found time to visit, and the extensive acquaintance with American manners and literature, which he was able (as he thinks) to acquire. The city-hall, the court of sessions, the theatre, the steam-frigate, the forts on Long Island, the hospital, the museum, are all described for the benefit of his countrymen; and he had leisure also to ascertain that 'good dinners are in high esteem among the upper commercial circles,' to have occasion to 'bear witness to the skill of the cooks and the hospitality of the entertainers,' to find 'some good works of native growth,' to discover

* This anecdote is extracted from Dr. Rush's Eulogium. It is in the same style of benevolence with the last words of the excellent Wistar.—'I feel love for all mankind.'

the merits of *Wilson's Ornithology* and *Knickerbocker's History*, and to learn that there is 'no American Review or Magazine which even American booksellers would recommend;' besides becoming acquainted with 'Dr. Mitchell, the great philosopher,' and amassing a fund of information upon the subject of the 'character of the Americans,' which he spreads into an essay under that head inserted in an early part of the Journal.

After this laudable assiduity in the pursuit of knowledge, he embarked in the steam-boat for Albany.

'The winter had been less severe than usual, which induced the captain to attempt making his way up the Hudson earlier than is customary. These steam boats are capable of accommodating from 2 to 300 passengers; they are about 120 feet in length, and as elegant in their construction as the awkward-looking machinery in the centre will permit. There are two cabins, one for the ladies, into which no gentleman is admitted without the concurrence of the whole company. The interior arrangements on the whole, resemble those of our best packets. I was not without apprehension, that a dinner in such a situation, for above 150 persons, would very much resemble the scramble of a mob; I was however agreeably surprised by a dinner handsomely served, very good attendance, and a general attention to quiet and decorum: "Truly, thought I, these republicans are not so very barbarous." Indeed when the cabin was lighted up for tea and sandwiches in the evening, it more resembled a ball-room supper, than, as might have been expected, a stage-coach meal. The charge, including board, from New York to Albany, 160 miles, is seven dollars.

'We started under the auspices of a bright frosty morning. The first few minutes were naturally spent by me in examining the machinery, by means of which our huge leviathan with such evident ease, won her way against the opposing current: but more interesting objects are breaking fast on the view; on our right are the sloping sides of New York Island, studded with villas, over a soil from which the hand of cultivation has long since rooted its woodland glories, substituting the more varied decorations of park and shrubbery, intersected with brown stubbles and meadows; while on our left, the bold features of nature rise, as in days of yore, unimpaired, unchangeable; gray cliffs, like aged battlements, tower perpendicularly from the water's edge to the height of several hundred feet.* Hickory, dwarf oak, and stunted cedars, twist fantastically within their crevices, and deepen the shadows of each glen into which they occasionally recede; huge masses of disjointed rocks are scattered at intervals below; here the sand has collected sufficiently to afford space for the woodman's hut, but the narrow waterfall, which in summer turns his saw-mill, is now a mighty icicle glittering to the morning sun; here and there a scarcely perceptible track conducts to the rude wharf, from which the weather-worn lugger receives her load of timber for the consumption of the city. A low white monument near one of these narrow strands marks the spot on which the good and gallant Hamilton offered the sacrifice of his life to those prejudices, which noble minds have so seldom dared to despise. He crossed from the state of New York to evade the laws of his country;

* The whole of this ridge closely resembles Undercliff in the Isle of Wight.

and bow to those of false shame and mistaken honour. His less fortunate adversary still survives in New York, as obscure and unnoticed as he was once conspicuous.'

The navigation being impeded by floating ice, he was obliged to leave the boat at Fishkill, and prosecute his journey by land; this mishap however does not appear to have excited his spleen as it would that of most of his countrymen; at least he certainly did not view Poughkeepsie with a jaundiced eye, when he drew the following picture:

'Poughkeepsie was the first country town, or rather village, I had seen; and as the features of all are much alike, it shall be described for a specimen. Houses of wood, roofed with shingles, neatly painted, with generally from four to six sash windows on each floor, two stories high, and a broad viranda, resting on neat wooden pillars, along the whole of the front: Such is the common style of house-building through the whole state. It unites to cleanly neatness a degree of elegance, confined in England to the cottage *ornée*; but here common to all houses; very few sink to a meaner fashion: this seems strange to the eye accustomed to a hundred wretched hovels for one habitation of graceful comfort; but poverty has not yet wandered beyond the limits of great towns in America; in the country every man is a land owner, and has competence within his grasp; "*O fortunatos nimium sua si bona norint.*"'

Making a stay of a few days only at Albany, our author proceeded northwardly into Canada, making his way through deep snows and in intensely cold weather, over the frozen surface of Lake Champlain, with a resolute endurance of hardship in an *amateur* tourist, equally admirable and unaccountable.

'The snow,' he says, 'which had hitherto been partial, now began to impede the progress of our wagon, which had been moving at the rate of three and a half miles per hour. We were frequently obliged to alight, and walk down steep hills, thickly encrusted with ice and snow. A fine bear had preceded us, as we discovered by his large round foot prints, but he was not complaisant enough to show himself from some craggy knoll, and welcome us to his solitude. A small ground squirrel was the only specimen of bird or beast we encountered.'

And when upon the lake over which the road lay,

'The keen blasts of the north, sweeping over its frozen expanse, pierced us with needles of ice; the thermometer was 22° below zero; buffalo hides, bear skins, caps, shawls and handkerchiefs were vainly employed against a degree of cold so much beyond our habits. Our guide, alone of the party, his chin and eye-lashes gemmed and powdered with the drifting snow, boldly set his face and horses in the teeth of the storm. Sometimes a crack in the ice would compel us to wait, while he went forward to explore it with his axe, (without which, the American sleigh-drivers seldom travel,) when, having ascertained its breadth, and the foothold on either side, he would drive his horses at speed, and clear the fissure, with its snow ridge, at a flying leap; a sensation we found agreeable enough, but not so agreeable as a good inn and dinner at Burlington.'

But 'winter barricades the realms of frost' in vain; our adventurous traveller pierces the icy barrier and penetrates as far as Montreal and Quebec; and as we cannot but consider the Canadians as our future fellow-citizens, and their country destined sooner or later to become a member of our national family, and therefore presenting objects of lively curiosity and interest, we shall extract fully and freely for the amusement of our readers from that part of the book before us, which is descriptive of Canadian scenery and Canadian character.

'Nothing could be more Siberian than the aspect of the Canadian frontier: a narrow road, choked with snow, led through a wood, in which, patches were occasionally cleared, on either side, to admit the construction of a few log-huts, round which a brood of ragged children, a starved pig, and a few half-broken rustic implements, formed an accompaniment more suited to an Irish landscape than to the thriving scenes we had just quitted. The Canadian peasant is still the same unsophisticated animal whom we may suppose to have been imported by Jacques Cartier. The sharp, unchangeable lineaments of the French countenance, set off with a blue or red night-cap, over which is drawn the hood of a gray capote, fashioned like a monk's cowl, a red worsted girdle, hair tied in a greasy leathern queue, brown mocassins of undressed hide, and a short pipe in his mouth, gave undeniable testimony of the presence of Jean Baptiste. His horse seems to have been equally solicitous to shame neither his progenitors nor his owner, by any mixture with a foreign race, but exhibits the same relationship to the horses, as his rider to the subjects of Louis XIII. Now, too, the frequent cross by the road side, thick-studded with all the implements of crucifixional torture, begins to indicate a catholic country: distorted virgins and ghastly saints decorate each inn room, while the light spires of the parish church, covered with plates of tin, glitter across the snowy plain.

'At La Prairie we crossed the ice to Montreal, whose isolated mountain forms a conspicuous object at the distance of some leagues. From thence to Quebec, the road follows the course of the St. Lawrence, whose banks present a succession of villages, many of them delightfully situated; but all form and feature were absorbed in the snowy deluge, which now deepened every league; add to which, the sleigh-track, by frequently running on the bed of the river, placed us below prospect of every kind. We found the inns neat, and the people attentive; French politesse began to be contrasted with American bluntness. It is curious to observe that this characteristic of the Americans, which so frequently offends the polished feelings of English travellers, is exactly what was formerly objected by the French to ourselves. The "rudesse" of the English character was long a standing jest with our refined neighbours; but we have now, it seems, so far shaken off this odious remnant of uncourtly habits, as to regard it with true French horror in our trans-atlantic cousins.

'It was Sunday when we arrived at St. Anne's, mass was just finished, and above an hundred sleighs were rapidly dispersing themselves up the neighbouring heights, and across the bed of the river, to the adjacent villages. The common country sleigh is a clumsy, box-shaped machine, raised at both ends; perhaps not greatly unlike the old

heroic car. It holds two persons, with the driver, who stands before them. One horse is commonly sufficient, but two are used in posting, when the leader is attached by cords, tandem-wise, and left to use his own discretion, without the restraint of rein, or impulse of whip. Should, however, the latter stimulus become indispensable, the driver jumps from the sleigh, runs forward, applies his pack-thread lash, and regains his seat without any hazard from extraordinary increase of impetus. The runners of these sleighs are formed of two slips of wood, so low that the shafts collect the snow into a succession of wavy hillocks, properly christened "cahots," for they almost dislocate your limbs five thousand times in a day's journey. An attempt was once made to correct this evil, by prohibiting all *low runners*, as they are called, from coming within a certain distance of Quebec; meaning, thereby, to force the country people into the use of high runners, in the American fashion. Jean Baptiste, however, sturdily and effectually resisted this heretical innovation, by halting with his produce without the limits, and thus compelling the towns-people to come to him to make their purchases. The markets both of Montreal and Quebec exhibit several hundred market sleighs daily. They differ from the pleasure, or travelling sleigh, in having no sides; that is, they consist merely of a plank bottom, with a kind of railing. Hay and wood seem the staple commodities at this season, both of which are immoderately dear, especially at Quebec; even through the States, the common charge for one horse's hay for a night, was a dollar. Provisions are brought to market frozen, in which state they are preserved during winter; cod fish is brought from Boston, a land carriage of 500 miles, and then sells at a reasonable rate, the American commonly speculating on a cargo of smuggled goods back, to make up his profit; a kind of trade extremely brisk betwixt the frontier and Montreal.

'As we approached Quebec, snow lay to the depth of six feet; from the heights of Abram, the eye rested upon what seemed an immense lake of milk; all smaller irregularities of ground, fences, boundaries, and copse woods, had disappeared; the tops of villages and scattered farm houses, with here and there dark lines of pine-wood, and occasionally the mast of some ice-locked schooner, marking the bed of the Charles river, were the only objects peering above it. A range of mountains, sweeping round from west to north, until it meets the St. Lawrence, bounds the horizon; no herald of Spring had yet approached this dreary outpost of civilization; we had observed a few blue thrushes in the neighbourhood of Albany, but none had yet reached Canada; two only of the feathered tribe, brave the winter of this inclement region; the cosmopolite crow, and the snow bird,* a small white bird, reported to feed upon snow, because it is not very clear what else it can find.

'It would be acting unfairly to Quebec, to describe it as I found it on my arrival, choked with ice and snow, which one day flooded the streets with a profusion of dirty kennels, and the next, cased them with a sheet of glass. Cloth or carpet boots; galashes, with spikes to their heels; iron pointed walking-sticks, are the defensive weapons perpetually in employ on these occasions. The direction of the streets too, which are most of them built up a precipice, greatly facilitates any inclination one may entertain for tumbling, or neck-breaking.'

* *Emberiza hyemalis*.

‘The falls of Montmorenci are formed by a little river of that name, near its junction with the St. Lawrence, about five miles north of Quebec. They have a peculiar interest in winter, from the immense cone of ice, formed at their foot, which was unimpaired when I visited them, in the second week of April. After winding up a short but steep ascent, the road crosses a wooden bridge, beneath which the Montmorenci rushes betwixt its dark gray rocks, and precipitates itself in a broken torrent down a wooded glen on the right; it is not until you have wound round the edge of this glen, which is done by quitting the road at the bridge-foot, that you obtain a view of the falls; nor was their effect lessened by this approach; a partial thaw, succeeded by a frost, had spread a silvery brightness over the waste of snow. Every twig and branch of the surrounding pine-trees, every waving shrub and briar was encased in chrystal, and glittering to the sun beams, like the diamond forest of some northern elf-land. You are now on the edge of a precipice, to which the fall itself, a perpendicular of 220 feet seems diminutive; it is not until you descend and approach its foot, that the whole majesty of the scene becomes apparent; the breadth of the torrent is about fifty feet. The waters, from their prodigious descent, seem snowy-white with foam, and enveloped in a light drapery of gauzy mist. The cone appears about 100 feet in height; mathematically regular in shape, with its base extending nearly all across the stream: its sides are not so steep but that ladies have ascended to the top of it; the interior is hollow. I regret to add, that a mill is constructing on this river, which will, by diverting the stream, destroy this imperial sport of nature; or at least reduce it to the degradation of submitting to be played off at the miller's discretion, like a Versailles fountain.’

‘The town, or rather city, of Quebec, is built on the northern extremity of a narrow strip of high land, which follows the course of the St. Lawrence for several miles, to its confluence with the Charles. The basis of this height is a dark slate-rock, of which most of the buildings in the town are constructed. Cape Diamond terminates the promontory, with a bold precipice towards the St. Lawrence, to which, it is nearly perpendicular, at the height of 320 feet. It derives its name from the crystals of quartz found in it, which are so abundant, that after a shower the ground glitters with them. The lower town is built round the foot of these heights, without the fortifications, which, with the upper town, occupy their crest, in bleak pre-eminence; the former, snug and dirty, is the abode of thriving commerce, and of most of the lower classes employed about the navy. The latter, cold and lofty, is the seat of government, and principal residence of the military; and claims, in consequence, that kind of superiority which some heads have been said to assert over the inglorious belly: to speak the truth, neither has much to boast on the score, either of beauty, or convenience.’

‘The Huron village of Loretto stands on the left bank of the Charles about four miles below the lake, (eight from Quebec.) The river, immediately on passing the bridge, below the village, rushes down its broken bed of granite, with a descent of about seventy feet, and buries itself in the windings of the deeply-shadowed glen below. A part of the fall is diverted to turn a mill, which seems fearfully suspended above the foaming torrent. The village covers a plot of ground very much in the manner of an English barrack, and altogether the reverse

of the straggling Canadian method; it is, in fact, the method of their ancestors. I found the children amusing themselves with little bows and arrows. The houses had generally an air of poverty and slovenliness: that, however, of their principal chief, whom I visited, was neat and comfortable. One of their old men gave me a long account of the manner in which the Jesuits had contrived to trick them out of their seignoral rights, and possession of the grant of land made them by the king of France, which consisted, originally, of four leagues, by one in breadth, from Sillori, north. Two leagues of this, which were taken from them by the French government, upon promise of an equivalent, they give up, he said, as lost; but as the property of the Jesuits is at present in the hands of commissioners appointed by our government, they were in hopes of recovering the remainder, which it never could be proved that their ancestors either gave, sold, lent, or in any way alienated. Although the oldest among them retains no remembrance of the wandering life of their ancestors, it is still the life they covet; "for," said a young Huron, "*on s'ennuie dans le village, et on ne s'ennuie jamais dans les bois.*"

' From Quebec to Montreal may be called one long village. On either shore a stripe of land, seldom exceeding a mile in breadth, (except near the streams which fall into the St. Lawrence,) bounded by aboriginal forests, and thickly studded with low-browed farm houses, white-washed from top to bottom, to which a log-barn and stable are attached, and commonly a neat plot of garden ground, represents all that is inhabited of Lower Canada. A cluster of these houses becomes a village, generally honoured with the name of some saint, whose church glitters afar with tin spires and belfry. Upon the shoulders of this patron saint, the Canadian rests the chief part of his cares, both temporal and eternal—having committed his seed to the same ground, and in the same manner with his forefathers, he trusts that the "*bon Dieu*" will, through the intercession of the said saint, do the rest. Should an inclement season, as was the case last year, disappoint his hopes, he is prepared patiently to confess himself, and die of hunger, fully persuaded that the blessed St. Anne, or St. Anthony, will not fail him in both worlds.'

' After quitting the neighbourhood of Montreal, we see little of the French Canadian; he is succeeded by settlers of a character very different; and with whom he is generally placed in humiliating contrast. He gains little by travellers; few enter his cottage, or inquisitively scan the character of an ignorant and superstitious race, who aspire to little more than to walk in the steps of their priests and forefathers. Certainly if intellectual power be the sole measure of human merit, their's lies in little compass.—Ignorant they unquestionably are, though I doubt whether they have a right to such extreme pre-eminence in this respect, as Englishmen are usually liberal enough to assign them: Schools are common through the province, and the number of colleges seems proportioned to the population: the gentry and tradesmen appear not much inferior in information, to the country gentlemen and tradesmen of wiser nations; and if the share of the peasant's intellect exceeds not much that of the ox he drives, he may claim fellowship in this respect, with the peasant of almost every country on the globe, except the United States. He is certainly superstitious, that is, he believes all his priest tells him—no great peculiarity. Let not, however, those quali-

ties be overlooked, which give a grace to his poverty, sweeten the cup of his privations, and almost convert his ignorance into bliss.—Essentially a Frenchman, he is gay, courteous and contented: If the rigours of a Canadian climate have somewhat chilled the overflowing vivacity derived from his parent stock, he has still a sufficient portion of good spirits, and loquacity, to make his rulers, and neighbours, seem cold and silent: To strangers and travellers, he is invariably civil, seeming to value their good-word beyond their money: He is reckoned parsimonious, because all his gains arise from his savings: He is satisfied with the humblest fare, and his utmost debauch never exceeds a “coup” of rum, and pipe of tobacco, taken with a dish of gossip, the only luxury in which he can be accounted extravagant.*

‘At present, great crimes are almost unknown, and petty offences are rare; I have indeed heard the lower classes accused of a propensity to pilfer, but I am inclined to think, few instances of this kind occur, except from the pressure of extreme want. The late war, by calling out a considerable proportion of the population to serve in the militia; has produced an evident change in the manners of the young men: I always found two invariable symptoms of a man’s having *served*; a little more intelligence, and a great deal more knavery. But if the war did not mend their morals, it certainly raised their character: They exhibited a high degree of courage in the field, and an affectionate zeal towards their governor, whom they believed their friend: a striking instance of this occurred early in the war. While Sir George Prevost was at Montreal, a body of several hundred peasants, from the remotest settlements of the province, came to wait on him; each man was armed with whatever weapon he could procure on the spur of the occasion, and all were clothed and provisioned for immediate service: An old man, who had been a soldier in the revolutionary war, was at their head, who thus addressed Sir George: “My general, we heard you were in difficulty, and have marched to your assistance; I have served myself, and though an old man, do not think I am quite incapable of duty.”—Sir George, strongly affected with this instance of attachment, accepted their services, and they acted as a separate body during the whole of the campaign.

‘The Canadians bear a considerable antipathy to the Americans, whom they denominate, “*Sacres Bastonnais*.”* I believe it to arise principally from religious prejudices; in proof of which, there is a striking anecdote related in the life of Franklin, who made an attempt to bring them over to the revolutionary cause. At this day, even the better informed among them are fully persuaded that the American government is constantly plotting their ruin, and the destruction of the mighty city of Quebec. I was witness to a curious exemplification of this feeling: A young Canadian, by no means illiterate, informed me one morning, with a very grave face, that a tremendous plot had been discovered—to destroy the whole city by blowing up the powder magazine; that a train had been found ready laid, and no doubt existed of an American’s being at the end of it. I took the trouble to trace the source of this report, and found it to originate in an order to mend a broken door belonging to the magazine. A fire never happens in the

* Not ‘*sacres Bastonnais*,’ but ‘*sacrés Bostoniens*.’ R.

town, (and they happen very often,) but the "*Bastonnais*" are the incendiaries.—Petty quarrels betwixt the natives and the Vermontese keep this feeling alive; and the English may well say of it, in the words of Sir Lucius O'Trigger, "'Tis a pretty quarrel as it is, and explanation would spoil it.'"

The lieutenant next bent his course towards Upper Canada, ascending the St. Lawrence as far as Cornwall in a batteau, a mode of travelling which he calls 'a sad waste of life,' because of its monotony; the change which he made however for the stage-wagon to Prescott, could scarcely have been advantageous, if the vehicle deserved his condemnation as 'one of the roughest conveyances on either side of the Atlantic.' Every one recollects how much we heard and read of Kingston and Sackett's Harbour during the late war; they have now sunk into comparative obscurity, but on account of what they have been, the following sketch of each is interesting.

'It (Kingston) contains some good houses, and stores; a small theatre, built by the military for private theatricals; a large wooden government-house, and all the appendages of an extensive military, and naval establishment, with as much society as can reasonably be expected, in a town so lately created from the "howling desert." The adjacent country is flat, stony, and barren; a circumstance which perhaps increases the kind of interest peculiar to the place: do you approach it by land, the road lies through a tract of forest, in the midst of which the first rude traces of population are scarcely visible: do you come by water, uncultivated islands, and an uninterrupted line of wooded shore, seem conducting you to the heart of a wilderness, known only to the hunter, and his prey: you emerge from a wood, double a headland, and a fleet of ships lies before you, several of which are as large as any on the ocean: others, of equal dimensions, are building on the spot, where, a few months since, their frame-timbers were growing. Two sources of astonishment here rise in the mind: first, the magnitude of the resources called into action; secondly, the object which called them forth. Of the first, some idea may be formed, by considering that the St. Lawrence alone cost 300,000*l.* The *Psyche* frigate, sent from England in frame, cost 12,000*l.* in transporting from Quebec. The Commissariat disbursements at Kingston, during the war, were estimated at 1000*l.* per diem. The present expense of the naval establishment is about 25,000*l.* per annum: the navy-yard employs 1200 labourers.* For the object, on one side, there is America, with "millions on millions" of acres beyond what her population can fill up; on the other, England, contending for, and expending her best blood and treasure in defence of a country, one half of which is little better than a barren waste of snows, and the other, a wild forest, scarcely intersected by a thread of population. This is the "*gros jeu*" of society.'

'Sackett's harbour has a mean appearance after Kingston; its situation is low, the harbour small, and fortifications of very indifferent construction, both as to form and materials. The navy-yard consists merely of a narrow tongue of land, the point of which affords just space suf-

* Considerable reductions have lately taken place in the whole establishment.

ficient for the construction of one first-rate vessel, with barely room for workshops, and stores, on the remaining part of it. One of the largest vessels in the world is now on the stocks here; her dimensions are 196 feet keel, by 57 beam; she is built over, to preserve her, and may literally be said to be housed: there is an observatory on the top of the building, commanding an extensive view of the lake, and flat wooded country. About a mile up the river, there is another vessel of equal dimensions, built, and housed, literally in the woods. The town consists of a long street, in the direction of the river, with a few smaller ones, crossing it at right angles: it covers less ground than Kingston, and has fewer good houses; it has however, the advantage of a broad flagged footway, while the good people of Kingston, notwithstanding the thousands expended in their town, and the quarries beneath their feet, submit to walk ankle deep in mud, after every shower. Whence this difference? The people of Kingston are not poor, ignorant, French Canadians, but substantial, active, Scotch or English traders. Probably it lies in this, that the Americans are at home, while the English Canadian considers himself as a temporary resident, for the purpose of making a fortune to spend in his native country.

‘The fortifications at Sackett’s are so inconsiderable, that one is equally surprised that the American government should have left their naval depôt so inadequately protected, and that our army should have failed to take it.’

‘The government of the United States not only preaches, but practises economy. The establishments at Sackett’s are on the most moderate scale. Two regiments of the line, with a proportion of artillery, for garrison duty, 80 men in the navy-yard, and one boat, the *Lady of the Lake*, in commission: what dreadful havoc would this parsimonious government make at Kingston!’

The following anecdote as illustrative of the *fortune of war*, and one among a million of a similar character that might be collected to show ‘on what foundation stands the warrior’s pride,’ we have had from another source and believe to be authentic, but we do not consider it in the slightest degree derogatory to the justly earned reputation of a gallant officer.

‘An American naval officer, who obligingly showed us through the navy-yard, related by what singular accident the place was saved from Sir George Prevost’s attack; an anecdote I have since heard confirmed, from a variety of sources. The garrison consisted almost entirely of militia, under general Brown, and ran away on the first cannonade, leaving a few artillery-men in the fort, who were preparing to abandon it; the buildings of the navy-yard were already on fire. The general having in vain attempted to stop his panic-struck soldiers, crossed their flight, at the end of the street leading towards Brownville, declaring, that if they would run, they should not run towards home, and so turned them off to the Oswego road, which runs obliquely in the direction of the right flank of the British forces, as they had landed from Horse island. The latter perceiving a considerable force moving rapidly in this direction, concluded they had been falsely informed of the strength of the American force, and actually gave up the attack, through fear of

being cut off by the runaways. On such contingences depend the laurels of war.'

Near Ancaster in Upper Canada, he met with an incident the recollection of which, probably, had a soothing effect upon his temper whenever its placidity was subsequently endangered, as must often have happened, by that want of attention on the part of our innkeepers and their servants, so often complained of by foreigners.

'Having mounted the height, and entered the village; I was agreeably surprised to find a tavern, superior both in size and appearance to any thing I had expected in a village so remote from any great line of travelling. On calling for the ostler, I was quietly answered, "he would come as soon he had taken his tea;" so I managed for myself; not caring, after a fatiguing day's journey, that my horse should wait his independent leisure, and the uncertain close of a tea-table conversation.

'The landlady, a very obliging woman, apologized afterwards for this inattention, on the ground of the impossibility of procuring good servants; and I mention this incident, one of many similar, to show that this free and easy behaviour of the lower classes, which English travellers so frequently complain of in the States, and attribute to their republican principles, is common enough under our own government, whenever the supply of labour is disproportionate to the demand for it.'

After viewing the falls of Niagara, he proceeded by a route rather unusual through Batavia, Bath, Wilkesbarre and Bethlehem to Philadelphia. This city does not appear to have pleased him; he reflects slightly on its want of hospitality, a virtue which he thinks does not belong to the American character generally, and we are induced by the nature of his strictures upon the manners of the ladies, to suppose that he was not fortunate in the society to which (if any) he was introduced. He evidently knows little of Philadelphia; and there must have been a lamentable *hiatus* in his notebook, to make it necessary to fill up his pages, as he has done, with the history and regulations of the jail.

Baltimore and Washington, particularly the latter, won much more of his approbation, and for a very natural reason. In Baltimore 'though very slightly introduced,' he 'received more civilities in the week he spent there than in the whole course of his travels besides.' And the easy, social, boarding-house habits of the metropolis afforded an opportunity of introduction to better society than he had yet seen, excepting perhaps the 'upper commercial circles' of New York, whose dinners he had found so well cooked.

'I fell into very pleasant society at Washington. Strangers who intend staying some days in a town, usually take lodgings at a boarding-house, in preference to a tavern: in this way, they obtain the best society the place affords; for there are always gentlemen, and frequently ladies, either visitors or temporary residents, who live in this manner to avoid the trouble of housekeeping.'

‘I found the little circle into which I had happily fallen, full of good sense and good humour, and never quitted it without feeling myself a gainer on the score, either of useful information or of social enjoyment.’

Accordingly his observations are in the very spirit of generosity and good will.

‘There is little doubt that Washington will attain as great an extent as can be expected for a city possest of no commercial advantages, and created, not by the natural course of events, but by a political speculation. The plan, indeed, supposes an immense growth, but even if this were attainable, it seems doubtful how far an overgrown luxurious capital would be the fittest seat for learning, or even legislation. Perhaps the true interest of the union would rather hold Washington sacred to science, philosophy, and the arts: a spot in some degree kept holy from commercial avarice, to which the members of different states may repair to breathe an atmosphere untainted by local prejudices, and find golden leisure for pursuits and speculations of public utility. Such fancies would be day dreams elsewhere, and are so perhaps here, but America is young in the career of political life; she has the light of former ages, and the sufferings of the present to guide her; she has not crushed the spirits of the many, to build up the tyranny of the few, and, therefore, the prophetic eye of imagination may dwell upon her smilingly.’

‘The president, or rather his lady, holds a drawing-room weekly, during the sitting of Congress. He takes by the hand those who are presented to him, shaking hands being discovered in America to be more rational and manly than kissing them. For the rest, it is much as such things are every where; chatting, and tea, compliments, and ices, a little music, (some scandal, I suppose, among the ladies,) and to bed. Nothing in these assemblies more attracted my notice, than the extraordinary stature of most of the western members; the room seemed filled with giants, among whom, moderately sized men crept like pigmies. I know not well, to what the difference may be attributed, but the surprising growth of the inhabitants of the Western states is matter of astonishment to those of the Eastern, and of the coast line generally. This phenomenon, which is certainly a considerable stumbling-block to the Abbé Raynal’s theory, may probably be resolved into the operation of three positive causes, and one negative, namely, plentiful but simple food, a healthy climate, constant exercise in the open air, and the absence of mental irritation. In a more advanced stage of society, luxurious and sedentary habits produce in the rich that enfeeblement of vitality, which scanty food, and laborious or unwholesome occupations bring upon the poor. The only persons to be compared with these Goliaths of the West, were six Indian chiefs from Georgia, Chactaws or Chickasaws, who having come to Washington on public business, were presented at Mrs. Madison’s drawing-room. They had a still greater appearance of muscular power than the Americans; and while looking on them, I comprehended the prowess of those ancient knights, whose single might held an army in check, “and made all Troy retire.”

‘The sittings of Congress are held in a temporary building, during the repair of the Capitol: I attended them frequently, and was fortunate enough to be present at one interesting debate on a change in the mode of presidential elections: most of the principal speakers took a part in

it: Messrs. Gaston, Calhoun, and Western in support of it; Randolph and Grosvenor against it. The merits of the question were not immediately to be comprehended by a stranger, but their style of speaking was, in the highest degree, correct and logical, particularly that of Mr. Western (*Webster*) of New Hampshire, whose argumentative acuteness extorted a compliment from Mr. Randolph himself, "albeit unused to the complimenting mood." Mr. Grosvenor, both in action and language, might be considered a finished orator, as far as our present notions of practical oratory extend.'

Continuing his course to the south, he explored the famous cave in Virginia, called Madison's cave, and though it has been often described, we are tempted to extract his account of it.

'The entrance afforded mere crawling room, but as we receded from the light of day, the vaulting rose, and after descending some rude steps and crags, we began to perambulate a magnificent subterranean palace. Its length is reckoned at 800 yards, and taking the curvatures of the numerous apartments it may be as much: there are about 14 of them, of various dimensions; some low-browed and studded with pointed and glittering stalactites, like fairy grottoes; others long and spacious, with roofs so lofty, that the summits of the massive congelations, which, pillar-like, descend from them to the ground, are shrouded in obscurity. The largest of these apartments, called Washington's hall, is 93 yards in length, of a proportionate breadth, and probably 50 feet high.

'It is impossible to describe the solemn grandeur of this natural cathedral: clusters of stalactitic columns, many of them ten or twelve feet in circumference, rise in magnificent order, along the sides; their colour is of a glistening brown, with frequently a shaft, a pedestal, or an intercolumniation of snowy whiteness. On approaching the upper end, our lights gleamed upon a gigantic stalactite, which, in the dimness, bore some resemblance to a throned statue of alabaster; it is called Washington's statue; but this appellation, like many other misnomers and conceits, such as Solomon's throne, David's sceptre, Adam and Eve in Paradise, which the guide forces on your notice as you proceed, serves only to create a tiresome distraction of the attention, by introducing ideas peculiarly ill-suited to a scene, in which nature is working alone in power and beauty, regardless of the existence of man and his passions. There is scarcely a turn in the cavern which does not present some curious specimen of her sportive creation; at one time imitating, the folds of gorgeous drapery; at another, representing a water-fall, which seems to have been suddenly converted into marble; here she has chiselled out the model of a Gothic oratory; there adorns a large sitting-room, with flowers and rural implements. The larger columns, being hollow, give out, when forcibly struck, a deep and melodious sound, which heard in the remoter caverns, has the effect of fine music. What a Pythian dwelling for old superstition!'

We trust that Mr. Jefferson's name is now sufficiently disconnected from party politics, to allow us, without infringing the rule by which we endeavour to be guided, of never touching that dangerous subject, to present to our readers the following interesting and disinterested eulogium on his character.

‘ Having an introduction to Mr. Jefferson, I ascended his little mountain on a fine morning, which gave the situation its due effect. The whole of the sides and base are covered with forest, through which roads have been cut circularly, so that the winding may be shortened or prolonged at pleasure: the summit is an open lawn, near to the south side of which, the house is built, with its garden just descending the brow: the saloon, or central hall, is ornamented with several pieces of antique sculpture, Indian arms, Mammoth bones, and other curiosities collected from various parts of the Union. I found Mr. Jefferson tall in person, but stooping and lean with old age, thus exhibiting that fortunate mode of bodily decay, which strips the frame of its most cumbersome parts, leaving it still strength of muscle and activity of limb. His deportment was exactly such as the Marquis de Chastellux describes it, above thirty years ago: “ At first serious, nay even cold,” but in a very short time relaxing into a most agreeable amenity; with an unabated flow of conversation on the most interesting topics, discussed in the most gentlemanly, and philosophical manner. I walked with him round his grounds, to visit his pet trees, and improvements of various kinds: during the walk, he pointed out to my observation a conical mountain, rising singly at the edge of the southern horizon of the landscape: its distance he said, was 40 miles, and its dimensions those of the greater Egyptian pyramid; so that it accurately represents the appearance of the pyramid at the same distance; there is a small cleft visible on its summit, through which, the true meridian of Monticello exactly passes: its most singular property, however, is, that on different occasions it looms, or alters its appearance, becoming sometimes cylindrical, sometimes square, and sometimes assuming the form of an inverted cone.’

‘ Mr. Jefferson has not the reputation of being very friendly to England: we should, however, be aware, that a partiality in this respect, is not absolutely the duty of an American citizen; neither is it to be expected that the policy of our government should be regarded in foreign countries, with the same complacency with which it is looked upon by ourselves: but whatever may be his sentiments in this respect, politeness naturally repressed any offensive expression of them: he talked of our affairs with candour, and apparent good-will, though leaning, perhaps, to the gloomier side of the picture. He did not perceive by what means we could be extricated from our present financial embarrassments, without some kind of revolution in our government: on my replying, that our habits were remarkably steady, and that great sacrifices would be made to prevent a violent catastrophe, he acceded to the observation, but demanded, if those who made the sacrifices, would not require some political reformation in return. His repugnance was strongly marked to the despotic principles of Bonaparte, and he seemed to consider France under Louis XVI. as scarcely capable of a republican form of government; but added, that the present generation of Frenchmen had grown up with sounder notions, which would probably lead to their emancipation.’

‘ The conversation turning on American history, Mr. Jefferson related an anecdote of the Abbé Raynal, which serves to show how history, even when it calls itself philosophical, is written. The Abbé was in company with Dr. Franklin, and several Americans at Paris, when men-

tion chanced to be made of his anecdote of Polly Baker, related in his sixth volume, upon which one of the company observed, that no such law as that alluded to in the story, existed in New England: the Abbé stoutly maintained the authenticity of his tale, when Dr. Franklin, who had hitherto remained silent, said, "I can account for all this; you took the anecdote from a newspaper, of which I was at that time editor, and, happening to be very short of news, I composed and inserted the whole story." "Ah! Doctor," said the Abbé, making a true French retreat, "I had rather have your stories, than other men's truths."

'I slept a night at Monticello, and left it in the morning, with such a feeling as the traveller quits the mouldering remains of a Grecian temple, or the pilgrim a fountain in the desert. It would indeed argue great torpor, both of understanding and heart, to have looked without veneration and interest, on the man who drew up the declaration of American independence; who shared in the councils by which her freedom was established; whom the unbought voice of his fellow-citizens called to the exercise of a dignity, from which his own moderation impelled him, when such example was most salutary, to withdraw; and who, while he dedicates the evening of his glorious days to the pursuits of science and literature, shuns none of the humbler duties of private life; but, having filled a seat higher than that of kings, succeeds with graceful dignity to that of the good neighbour, and becomes the friendly adviser, lawyer, physician, and even gardener of his vicinity.'

Our author went as far south as Charleston, where he embarked for England, having passed nearly a year in America, and journeyed chiefly by land, upwards of three thousand miles. We take leave of him with sentiments of respect for his candour and his descriptive talent, and of gratitude for his partiality towards this country: Republican, we may even say democratic, in his political principles, he sees nothing but objects of admiration in our national institutions and public policy; and although in attempting to delineate the character and manners of our people, he has fallen into a looseness and confusion of ideas that show the subject was beyond his power, yet the failure is so natural and indeed inevitable to one possessed of his slight opportunities of observation, that we cannot censure him further than for the rashness of undertaking a task, to the performance of which he should have known he could not be competent.

ART. III.—*Voyages dans l'Amérique Méridionale, &c.; i. e. Travels in South America*, by Don Felix de Azara, Commissioner and Superintendant of the Lines of the Spanish Frontiers in Paraguay, from 1781 to 1801; containing a geographical, political, and civil Description of Paraguay, and the River Plata; an Account of the Discovery and Conquest of those Countries; various Details relative to their Natural History, and the Savage Tribes which inhabit them; a Statement of the Methods employed by the Jesuits to subject and civilize the Natives, &c.; published from the Author's Manuscripts, with a Sketch of his Life and Writings, by C. A. Walckenaer; and enriched with

Notes by G. Cuvier, Perpetual Secretary to the Class of Physical Sciences in the Institute, &c. To which is added the Natural History of the Birds of Paraguay and La Plata, by the same Author, translated from the original Spanish, and augmented by a great number of Notes, by M. Sonnini. Accompanied with an Atlas, containing Twenty-five Plates. 4 Vols. 8vo. and 4to. Atlas. Paris.

WE have been for some time desirous of attracting the notice of the American public to the Travels of Azara, as to one of the best sources of information concerning Paraguay and the countries of La Plata. We had hoped to meet with an English translation of the work, but have not been so fortunate as even to ascertain whether or not such a translation exists. If there be not one, we trust that it will not be long before the interest which the regions treated of in the work, now excite, will give birth at least to a judicious abstract of it in our language. Meanwhile we offer an account of it drawn in part from English journals, and to render our article more useful and entertaining, we have introduced translations of our own from the French, of some of the most remarkable of the details of the first and second volumes.

The favourable notice which Don Felix de Azara's communications have obtained on the other side of the water, and the signal opportunities which he enjoyed for directing his extended observation to tracts of country which have been very imperfectly explored, and which are destined to undergo new and important political revolutions, induced us to open these volumes with no ordinary degree of eagerness and expectation. The work, bespeaks a vigorous, independent, and active mind, comprizes a rich diversity of materials, and has powerful claims on our deliberate attention. The whole of volume I, and nearly two thirds of the second, are occupied by the travels; the remaining part of the second is allotted to an introductory view of the natural history of Cochabamba, and a description of its productions, by Don Tadeo Haenke, member of the Academies of Sciences at Vienna and Prague; and the third and fourth contain the ornithology of Paraguay and La Plata.

His editor informs us that Don Felix was born at Barbunales, near Balbastro, in Arragon, on the 18th of May, 1746. A few days previously to this event, his parents, who lived in happy retirement on their estate, had sent their eldest son, Don Nicholas, to the university of Salamanca. Don Felix commenced his literary career in that of Huesca; and when he had completed his course in philosophy, he entered the military academy of Barcelona. In the latter city, these two brothers, who had never seen each other, enjoyed an affectionate but transient interview; and they did not meet again till the expiration of thirty-five years. In 1764, Don Felix was appointed a cadet in the Galician regiment of infantry; in 1767, ensign in the corps of engineers; and in 1775, he was promoted to the rank of lieutenant. In this capacity he signalized

his courage in an expedition against Algiers, and received a dangerous wound from a large copper ball, which shattered one of his ribs, and to all appearance, deprived him of life. Owing, however, to the kind attention of a friend, and the boldness of a sailor who cut out the ball with a knife, he gradually recovered, after having endured the most excruciating pain, as it was necessary to extract a considerable portion of the rib. The wound did not close till five years afterward: at the same distance of time it broke out afresh, and thus naturally made way for the remaining fragment of the injured bone. He was then in America, and secluded from all the assistance of art: but the wound healed spontaneously. When roaming in the wilds of the same country, he broke his collar-bone by a fall from his horse, and again recovered without having recourse to any external application. With these accidental exceptions, and another which we shall presently mention, he seems to have enjoyed the most uninterrupted good health.

‘ I was accustomed to eat bread, (says he, in a letter to his editor,) till I had reached my twenty-fifth year, without any particular inclination for that species of food: but having experienced at that period of my life great difficulty of digestion, attended with symptoms of general indisposition, especially after dinner, I consulted a skilful physician at Madrid, who surmised that my complaints originated in the use of bread, and advised me to give it up. I did so. My sickness quickly vanished; and from that time I have never been indisposed. The want of bread has given me a higher relish for other kinds of aliment, than I felt when I blended them with that general article of human food. I am not in the habit of using any substitute for bread: but I am sensible that I am somewhat more partial to vegetables and fish than to butcher’s meat. For the rest, it is not extraordinary that I should abstain from bread, since the inhabitants of the countries which I have traversed are alike strangers to it, though they live as long as we do, and even longer.’

From this, and various instances which have come within our own knowledge, we have reason to believe that esculent roots are generally more light and nourishing than the most elaborate preparations of farinaceous plants.

By the treaty of Idelfonso, the courts of Spain and Portugal had mutually stipulated to name commissioners for the final definition and adjustment of their respective lines of demarkation in South America. Don Feliz de Azara, with the rank of lieutenant colonel of engineers, was one of those who were deputed by the Spanish government to direct the execution of these arrangements, and he set sail accordingly in 1781. By the chicanery of the Portuguese commissioners, however, the business was studiously protracted; till Don Felix, perceiving that his official services were unavailing, boldly projected a geographical survey of that vast country, of which he had been instructed to ascertain only the boundaries. Undismayed by the certain expense, trouble, fatigue, and danger, which were attendant on an operation of such magnitude and detail, and regardless of the secret or the avowed oppo-

sition which he might expect to encounter from the Spanish vice-roys, he steadily persevered, during thirteen years, in the prosecution of his scheme; and owing to the resources of his own unshaken mind, and the zeal of the officers who acted under him, he finally triumphed over every obstacle.

‘He provided himself with brandy, glass-beads, ribands, knives, and other trinkets, in order to gain the good will of the savages. The whole of his personal baggage consisted of a few clothes, a little coffee and salt, with tobacco, and the Paraguay herb for his attendants. The latter carried with them only the clothes which they wore: but they took with them a great many horses, regulating the number by the length of the journey, and fixing the proportion sometimes at twelve for each individual. These were by no means requisite for conveying the baggage, which was very trifling: but horses, it should be observed, are extremely common in these countries; occasion no trouble, because they receive only such food as they pick up themselves during the night, and are very easily fatigued. The travellers were also accompanied by large dogs.

‘They rose an hour before day-break to prepare breakfast. After this repast, individuals were detached from the troop to collect the horses which were dispersed in the neighbourhood, and sometimes even at a league’s distance, because, except those which each person retained close by him, during the night, they roamed and fed quite at large. As soon as the horses were re-assembled, each person let loose the animal which had served him for twenty-four hours; when the whole troop formed a circle round the relay-horses, to prevent their escape, while a man advanced into the circle, and by means of a noose, laid hold of such as were necessary for the journey. Finally, all put themselves in motion two hours after sun-rise. As there are no open roads in these deserts, a guide, well acquainted with the country, marched three hundred paces a-head, and quite alone, that his attention might not be diverted by conversation of any kind. After him came the relay-horses, which, in turn, were followed by the main body of the travellers; and thus the party continued its progress, without stopping, till two hours before sun-set.

‘They then selected for a halting station the neighbourhood of some marsh or rivulet; and men were dispatched, in different directions, to procure wood for fuel, and to catch cows for food, either from among the wild cattle in the plains, or from those which belonged to some habitation, if any such occurred within the distance of two or three leagues. In case these wild cows should fail, others followed in the rear of the troop. In some districts, a sufficient number of armadillos were procured for the subsistence of the whole company. To provide against the eventual failure of all these resources in a projected line of route, they previously laid in a stock of cows’ flesh, which they cut into very long shreds, of the thickness of a man’s finger, dried them in the sun, and conveyed them in packages on their horses, being the only sort of food which they carried along with them. They ate it when roasted on wooden skewers, the only mode of preparing meat in these countries, which forms the sole food of the inhabitants.

‘Previously to encamping on any spot, they were obliged to take precautions against the vipers, which are often very numerous. With

this view, they led out all the horses on the space which they intended to occupy, so as either to crush these reptiles, or to induce such of them as lurked under the grass to come out; an expedient to which the lives of a few horses were occasionally sacrificed. On retiring to rest, every individual spread a piece of cows' skin on the ground. M. De Azara was the only person who had a hammock suspended to stakes or trees. During the night, every body kept his horse near to his person, that in case of need, he might effect his escape from wild beasts. The approach of the latter was always announced by the dogs, which scented them at a great distance, because they exhale a very strong odour. In spite of every attention, it often happened that several vipers glided into the camp, but they usually lay concealed and quiet under the cows' hides on which the people slept. They sometimes passed near to or even over the men, without doing them the smallest harm: for they never bite but when disturbed.

'This order of march was observed only in those tracts in which no apprehensions were entertained from the savage Indians. Where he had reason to dread their encounter, M. De Azara had recourse to other precautions: he moved only in the night-time; he dispatched scouts in every direction to explore the proper line of march; two patrols preceded on each side of the troop; and each kept his rank, and had his arms in readiness. In spite of all this prudence and discretion, he was frequently attacked, and had the misfortune to lose some of his men.'

In the midst of these laborious and perilous wanderings, geometrical calculations, and the details that were inseparable from the pursuit of his primary object, the intrepid Spaniard contrived to bestow a considerable portion of his attention on the quadrupeds and birds which were peculiar to these regions.

This editor remarks that there is but one opinion in Europe, among naturalists, of the magnitude and utility of Azara's additions to natural history. The first class of the French Institute, made a very favourable report concerning his History of the Quadrupeds and Birds of South America. Of four hundred and forty-eight species of birds which he describes, about two hundred were never before mentioned by any naturalist or traveller. His descriptions of the external forms both of birds and quadrupeds evince the most patient observation, while his account of their dispositions and habits cannot fail at once to excite and fix the attention of the curious.

It would be equally foreign to our purpose and disgusting to our readers, to recite the base and unworthy artifices by which the Spanish viceroys endeavoured to sully and obscure the fair reputation of the traveller. The injustice and ingratitude of his 'superiors' (were they intitled to that appellation?) diminished not the zeal with which he executed their commands. When especially charged with the survey of the dreary waste on the southern coast, he shrunk not from the task, though he was aware that the performance of it would expose him to the daily attacks of ferocious savages, called *Pampas*. He was also intrusted with the command of the Brazilian frontier, which he was directed to explore; and

to free from the Portuguese settlers. He was moreover enjoined to visit the harbours of the Plata, and to draw up a plan of defence, in the event of an attack on the part of the English. At the request of the viceroys, he composed various representations and memoirs relative to the administration of public affairs; and among other schemes of salutary reform, he recommended the emancipation of the civilized Indians. Towards the close of his residence in America, he provided settlements for many families who had migrated from old Spain, under the auspices of government, with the view of colonizing the shores of Patagonia, but whom the supineness or the incapacity of the viceroy of Buenos Ayres allowed to languish without occupation, and to subsist on the public treasury.

The long oblivion of the complicated and meritorious services of the subject of these notices, at length drew to a period; for in 1789, he was promoted to the rank of captain in the navy;* and in 1801, he obtained, what he had often solicited in vain, permission to revisit his native country.

In the course of his introduction, the author takes occasion to state that his investigations were not limited to geographical surveys.

He informs us, moreover, that he not only directed his attention to the ancient traditions of the country, but perused a large portion of the civil archives of Assumption, several of the documents contained in those of Buenos Ayres, Corrientes, Santa Fé, and all the early memoirs relative to the colonies and parishes; by which means he has been enabled to correct the many errors of De Vaca, Herrera, Schimidels, Centenera, Guzman, Lozano, and Guevera. To his short *catalogue raisonné* of these writers, the editor has subjoined a few supplementary notices in the margin.

The first of the present volumes contains nine chapters, which treat of the climate and winds; the disposition and qualities of the soil; salts and minerals; the principal rivers and harbours; fishes; wild and cultivated vegetables; insects, reptiles, quadrupeds, and birds.

The following are his leading remarks on climate and winds. 'Let us take for southern limits, the straits of Magellan, or the parallel of 52, or 53 degrees; for northern, the parallel of 16 degrees; on the west, the most easterly irregular ridge of the Cordilleras, or chain of the Andes, which is contained within the same boundaries. On the east, the Patagonian coast to the river Plata, following the line of demarkation between the Spanish possessions and Brazil, to the parallel of twenty degrees.—Let us then continue proceeding directly to the north, and stopping at the point of 16 degrees mentioned above. These limits embrace a surface of more than 720 leagues in length. Its width varies, but 200 leagues may be taken as a mean term. I have not, indeed, traversed the whole of this surface; but I have obtained such in-

* This appointment, of a *colonel of engineers* to be a *captain in the navy*, will appear singular to the English reader.

formation as enables me to give an idea of it, except the province of Chiquitos, of which I shall not speak. In a country of so vast an extent, there is, as may be imagined, a diversity of climate; but as this diversity follows a gradation in strict correspondence with that of the latitude, to convey a notion of the climate and prevailing winds, it will suffice for me to report what I observed in two cities very far removed from each other.

‘At Assumption, the capital of Paraguay, situated at $25^{\circ} 16' 40''$ of latitude, taking the meridian of Paris, I observed that the mercury of Fahrenheit's thermometer rose, in my apartment, to 85, in summer, on common days; and as high as 100 on the warmest; and, that, in the winters which were called cold, it fell to 45. It is commonly said in the country, and truly, that it is always cold when the wind is to the south or southeast, and warm when it is to the north. The heat and cold seem, in fact, to depend as much or more upon the winds, than upon the situation or declination of the sun. The most usual winds are the easterly and the north. The south does not prevail for more than a month in the year; and if it draws to southeast, it renders the weather calm and serene. The west wind is scarcely known; or if it be sometimes felt, it does not last two hours.

‘The heat is less at Buenos Ayres: and the cold is greater there than at Assumption. In common winters, there are not more than three or four days on which water freezes, and that but slightly. The winds are in a three-fold degree stronger than at Assumption; they blow oftener from the west; the south wind always brings rain in winter and never in summer; this wind is more regular and violent in the spring and summer, than in the autumn; it raises clouds of dust at these seasons, from which much inconvenience is felt. The strongest winds are from southeast to southwest. Hurricanes are rare; but they occur at times, and have proved exceedingly disastrous. The atmosphere is every where moist and injurious to furniture, particularly at Buenos Ayres; at which place, the floors of chambers, with a south exposure, are always wet; the walls are covered with moss, &c. But nothing of all this is unhealthy. Fogs are rare; the sky is usually clear and serene, and snow may be said to be unknown. It hails but very seldom. Rain is announced by sure indications. The annual quantity of it appears to me to be greater, in these countries, than in Spain. At all seasons, and particularly in summer, there are frequent falls of rain accompanied by heavy storms of thunder and lightning. The lightning strikes ten times oftener than in Spain, particularly when the storm is from the northeast. During the gust of the 21st of January, 1793, it fell thirty-seven times within the city of Buenos Ayres, and killed nineteen persons.

‘As for what regards health, it may be confidently affirmed, that there is not in the whole world a more salubrious region than the one I am describing. Even the immediate neighbourhood of the waters and of the inundated grounds, is not found unwholesome.

‘The whole vast surface of this country is an even plain; the only exceptions are formed by some eminences or hills which do not rise more than 90 toises from their base. My observations with the barometer led me to conclude that the river Paraguay, in its course from north to south, has not a foot of descent by marine mile of latitude between the parallels of $16^{\circ} 24'$ and $22^{\circ} 57'$.’

Owing to the general and extensive flatness of these countries, the smaller rivers are arrested and evaporated before they reach the sea; and the lakes, which are very numerous, and occasionally also very extensive, are remarkably shallow. Though that of Xarayes, for example, is presumed to measure 110 leagues in length, and 40 in breadth, it is no where navigable, and is evaporated to complete dryness during the greater part of the year. ‘Some of the old writers believed that it was the source of the river Paraguay, whereas the fact is precisely the reverse: others, who took a pleasure in forging tales, have asserted that in the centre of this lake existed the empire of the Xarayes, or of el Dorado, or of Paytiti; and they have embellished this falsehood by other fables still more unaccountable.’ The quantity of soil that is flooded by these vast pieces of water, the impracticability of drainage and irrigation in boundless tracts of dead level, and the sand-stone rock, which stretches over all the flats on the east of the Paraguay and Parana, present insuperable obstacles to extensive vegetation and culture.

The following particulars it will be proper to mention, as nearly as we can, in the author’s own language:—

‘On the north of the river Plata, or in the plains of Montevideo and Maldonado, I have observed that the herds search for, and eat with avidity, dried bones; that in proportion as they advance northward, they eat a species of earth called *Barrero*, which is a salt clay found in the ditches; and that, when this fails, (which happens in the eastern districts of Paraguay and the Missions of Uruguay,) cattle of all kinds infallibly perish at the expiration of four months. We can scarcely conceive the eagerness which the herds manifest in seeking for and devouring this salt argillaceous earth: if they discover it after a month’s privation, they are not to be driven from it by blows; and by indulging in it to excess, they sometimes die of indigestion. I have been assured that the birds and quadrupeds of this country, which feed on vegetables, manifest the same propensity; and I can, at least, personally vouch for a great quantity of salt in the stomach of the Tapir. From these facts, I conclude that the pastures of the countries in question are incapable of supporting any species of cattle, without the addition of salt, or salted clay: but that the freshness of the herbage diminishes from the Missions to the river Plata. In Brazil, notwithstanding the luxuriance of the pasture, it is found impossible to rear cattle without salt; and since none is found in the country, and it is all imported from Europe, it forms a very expensive article, being sold on account of government.’

The state of things is quite reversed in the whole of Chaco, or in the region situated to the west of the Paraguay and Parana, and from the Plata southwards; every rivulet, lake, and well, being

brackish in summer. Even the rivers partake of this quality when their waters are low.

This intelligent author's remarks on the principal rivers, which he had occasion to survey, are extremely interesting. The Paraguay, at Assumption, when at its lowest level, is 1332 Parisian feet in breadth, and, at its ordinary height, discharges 196,618 cubic toises of water per hour. Its periodical rise commences about the end of February, and gradually and equally continues till the end of June, when it again begins to fall, and decreases by the same gentle gradations. The Parana, at its junction with the Paraguay, is estimated as equivalent to a hundred of the largest rivers in Europe. Having united with the Uruguay, it forms the Plata, which is reckoned the largest river in the world, and which is probably equal to the aggregate of all those of Europe.

This vast estuary of fresh water, which is without a parallel for width and magnificence, is 150 miles broad at its mouth, from Cape St. Maria, on one side, and Cape St. Anthony, on the other. Between Monte Video and the Punta de Piedras, which some have considered its proper limits, it is 80 miles in breadth; and at Buenos Ayres, which is 200 miles from its mouth, its breadth is about 30 miles; and, the shores being low, it is seldom that they can be seen from opposite sides. This immense inland sea is, however, rendered dangerous for the purposes of navigation, not only by rocks and sand-banks, which are the terror of mariners, and which greatly detract from its utility; but by tempests of wind which, bursting forth from the south-west, sweep over the boundless plains of the *Pampas*, where they meet with no obstacle to oppose them, and rush down the wide opening of the Plata with unequalled fury. A thunder storm is the general prelude to those destructive blasts, which are known by the name of the *Pamperos*; so that the mariner, being warned of the coming tempest, generally seeks shelter in some of the neighbouring ports.

From the short account which is here exhibited of the ports on the Plata, we may infer that Maldonado is at once the most capacious and the most secure, though it is sheltered only to the leeward of the island of Gorriti.

Buenos Ayres was erected into a viceroyalty in 1778, and several districts were added to it from Peru and Chili. From the latter those provinces were principally taken which are situated on the eastern declivity of the Andes.

The viceroyalty of Buenos Ayres was divided into five governments or provinces, namely,

I. Buenos Ayres, or Rio de La Plata, of which the chief towns are Buenos Ayres the capital, Santa Fe, Monte Video, and Maldonado on the opposite shores of the river.

II. Paraguay, of which the chief town is Assumption.

III. Tucuman, of which the chief towns are San Jago del Estero, and Cordova.

IV. Los Charcos, or Potosi, formerly part of Peru, and comprehending the new district of Santa Cruz de la Sierra. The chief towns are La Plata, Potosi, Santa Cruz de la Sierra, and La Paz.

V. Chiquito, or Cuzco, formerly part of Chili, of which the chief towns are Mendoza, and San Juan de la Frontera.

The vast plains of which so great a proportion of this viceroyalty consists are many of them fruitful; and, in the vicinity of the Spanish settlements, where they have been cultivated, they yield abundant crops of excellent corn, and other productions, while others afford pasture for numerous flocks of sheep. From the banks of the Paraguay, immense plains extend westward to the limits of the province of Los Charcos, and to the mountains that rise far to the north. These are in general elevated and dry, though traversed by numerous rivers. They are skirted by extensive and ancient forests, which afford shelter to the wild animals of the country, and they are inhabited by scattered tribes of Indians, who roam over their trackless deserts in a state of savage independence. One continued plain, in like manner, extends from the banks of the Plata to Chili, and to the large rivers of Patagonia. These plains are called the *Pampas*, and they present one uniform expanse of waving grass, uninterrupted either by wood or eminence for about 900 miles. The luxuriant herbage of those fertile districts affords pasture to innumerable herds of cattle, which rove about over a great portion of South America, and which are principally sought after by the Spanish hunters for their hides and tallow. The same circumstance has also favoured the multiplication of wild horses, which are so numerous in the plains, that travellers are often surrounded with them for the space of several weeks; and while they are passing them in troops, at full speed, which frequently happens for hours together, the party are in the greatest danger of being run over and trampled down. Here are also found deer, as well as great abundance of ostriches, armadillos, wild geese, ducks, partridges, and other game, and towards the frontiers, guanacoës and vicunnas are met with in considerable numbers. These regions are not well watered; for, though the rivers Saladillo, Hueque-Leuvu, and the first Desaguadero, otherwise called Rio Colorado, run through them, the country is traversed by no smaller streams running into those main rivers; so that they hold their solitary course through the arid plains; and no water is to be found, except what is collected in the pools when the rain falls.

In the whole tract of country which extends from the Plata to the straits of Magellan, scarcely a tree or a shrub exists. Near the Spanish frontier are found *viznages*, a species of large wild carrot, and thistles; which, with the bones and fat of cows and mares, constitute the only fuel. At Buenos Ayres and Monte Video, peach-trees are purposely planted for firing, and used as such with bones and fat. Chaco, on the contrary, contains extensive woods and orange-groves. In the native forests, the species are so diversified, that a person may sometimes traverse a considerable quantity of surface before he meets with twelve individuals belonging to the same kind. Several of the trees, which are indigenous to Paraguay, furnish a more compact, solid, and desirable timber than any that is produced in the forests of Europe.

The leaf called the Paraguay herb is the produce of a tree, or rather large shrub, which grows wild in the woods; and which, according to Molina, is the *Psoralea glandulosa* of Linnæus. To

render it fit for the purposes to which it is destined, the leaves are slightly heated, by drawing the branches through the flame of a common fire. They are then toasted, and afterward bruised, so as to keep, when closely pressed; for they have no very pleasant flavour in the first stage of preparation. In 1726, the quantity prepared was only twelve thousand five hundred quintals, and it now amounts to fifty thousand. A handful of the leaves being put into a cup, or small pipkin, it is filled with very hot water; which is immediately drawn into the mouth by suction, through a small tube, pierced at the lower end with small holes, which retain the leaves, and allow only the liquor to pass. Some persons sweeten the infusion with sugar. The people drink it at all hours; and the daily consumption of each inhabitant is averaged at an ounce. A workman can gather and prepare one and sometimes even three quintals (or hundred-weights) in a day.

With regard to cultivated vegetables, the produce of wheat, wine, and tobacco, which formerly was very considerable in Paraguay, has been nearly annihilated by the natural indolence of the inhabitants, and the injudicious interference of government. The cotton and sugar crops are also of very inconsiderable amount, and they are liable to be injured by the first approaches of cold: the *Jatropha manihot* is successfully cultivated, and yields both farinaceous food and excellent starch: varieties of maize and batatas likewise prosper: almond and plum-trees grow rapidly, and display a great profusion of blossoms, but produce no fruit; the pears are indifferent, and the cherries scarcely eatable: but oranges, figs, pomegranates, bananas, &c. are excellent and abundant.

Mr. Azara was not well versed in entomology, but some of the matters of fact mentioned in the seventh chapter and observed by himself, are well calculated to amuse every reader. Of a small species of ant, for example, we are told that they act in concert, and move in procession, when any of their sentinels announce a discovery of meat, and especially of sugar or comfits, which they prefer to all other food. These articles are sometimes preserved by being put on a table, of which each foot is placed in an earthen vessel, filled with water. Yet, says the writer, 'I have seen these ants, by clinging to one another, form a bridge, of an inch in breadth, and a palm in length, along which the others passed. If you suspend the table, or the board, the ants climb up the wall to the ceiling, till they reach the cord, which enables them to descend to the sugar, &c. I have myself attempted to keep them off by wrapping the feet of the table round with wool or horse-hair, without success. Nothing but soft tar prevents their passing. The sweet-meats must also be placed in a remote apartment; for these ants will not, in that case, soon discover them: but if one ant be inadvertently left in the room, it immediately informs the rest, which follow it in a body.' A still more destructive species is distinguished by its offensive odour, and by suddenly issuing from its retreat during the night, and overrunning the floors, walls, and

cieling of an apartment, two days previously to any remarkable change of weather. Their ordinary food is unknown: but, in these formidable sorties, which take place at the distance of months, and sometimes of years, they indiscriminately devour every spider, cricket, or beetle, that falls in their way. A mouse, on seeing them crawling out, runs off in dismay; or, if it cannot escape, it is assailed by numbers, and eaten up in an instant: even men have been known to make their retreat in their shirts: but the whole band may be dispersed by throwing among them a bit of lighted paper, or by spitting on them.

Chapter IX, which is of considerable length, treats of quadrupeds and birds: but it cannot be very profitably perused without a reference to the author's prior publication.

A brief notice of the animals of this country is all that can be attempted within our present limits.

Asses, mules, European sheep, stags of different species, foxes, rabbits, goats, and hogs, are numerous, and great numbers of wild dogs, are to be met with. These are descended from those of a domestic kind that have left their masters in pursuit of the game, with which the country every where abounds. The other wild animals are the puma or American lion, the jaguar and cougar, two species of American tigers, which are strong and ferocious animals, and commit great devastations among the flocks. The jaguar, when full grown, is a large animal, some of them measuring five feet from the nose to the root of the tail, which is two additional feet long, and so strong that they will drag the carcass of a horse or bull which they have killed to the place where they intend to devour it. They are excellent swimmers, and Azara mentions, that he has seen them swimming across a large river loaded with their prey. The puma is a weak and cowardly animal, and is now become very scarce in the parts inhabited by the Spaniards. The guazura, called the cougar by Buffon, is 47 inches long, without including the tail, which is 26 inches long. It flies from the human species, but kills calves, sheep, pigeons, and all other smaller animals. It does not stop to eat the flesh, but is contented with licking the blood. Of the other animals, the most remarkable are the anta or danta, which is between the elk and buffalo species. It is of the size of a large ass, has no horns, and is of singular strength. It is frequently found in the forests and plains of Paraguay, but has been so much hunted both for its skin and flesh, that it is scarce both in Tucuman and Buenos Ayres. The armadillos are very numerous all over South America, and are of various species, differing in size, and in the nature of the armature with which they are covered. The tamandua, or nurumi, or ant-eater, is 53 1-2 inches long, without reckoning the tail, which is in length 22 1-2 inches, besides a thick bunch of hair at its end, 11 inches long. There are enumerated various other small animals, which are generally carnivorous, preying upon birds, reptiles, or other inferior quadrupeds. The chibi-guazu, which he considers to be the jaguar of New Spain, or the tiger-cat of other countries, is 34 inches, and the tail 13 inches. Wild cats are found of various sorts.

The potent odours, which emanate from some of the weasel tribe in South America, have been commemorated by preceding

travellers; and the present author ascribes the most pestiferous stench to the *Viverra zorrillo*, or *Yaguaré*. Its effects are perceptible at the distance of a league, and powerfully repel men and dogs, if they venture within six feet of the animal. So insupportable, it is added, is the suffocating liquor, that if discharged in the heart of Paris, it would more or less contaminate every house in that large city; and, if a single drop be deposited on any article of wearing apparel, the latter must be consumed or thrown away, since no quantity of soap and water can render it any longer endurable to the olfactory nerves.

The *Vizcacha* is minutely described, and a few traits of its habits and modes of life are incidentally recorded. When the avenues to its burrows are blocked up, it would infallibly perish, did not other individuals of the same species re-open them. It is a nocturnal animal, and betrays such a propensity to hoarding, that it collects in the fields and at the entrances of its retreat heaps of small bones, and miscellaneous articles of every description; so that, when any thing is missing, the inhabitants are accustomed to find it in one of these motley parcels.

The sheep and goats, we are told, have no other shepherds than dogs, called *Ovejeros*. In the morning, these dogs drive out the flock from the court-yard, conduct them to the fields, attend them during the whole day, prevent them from straggling, defend them against every kind of attack, and at sun-set, re-conduct them to the house, where they pass the night.

‘It is not necessary that these dogs should be mastiffs, but only of a strong race. Being taken from their mothers before their eyes are opened, they are suckled by some of the ewes, which are forcibly held in the requisite posture; and they are strictly confined within the court-yard, till the moment of their being capable of following the flock, when they go out along with it. In the morning, the owner of the flock is particularly careful to give the dog-shepherd a plentiful allowance of meat and drink; because, if hunger should seize him in the fields, he would fetch home the sheep at noon. In order to prevent this premature return, it is not uncommon to hang a collar of meat to the dog’s neck, which he devours when his appetite becomes urgent, provided that it be not mutton, which the most violent hunger will not constrain him to eat. These dogs are all castrated males, because if they were not, they would abandon the flock, to run after the females; and if females, they would attract other dogs.’

The mongrel and wild dogs are, in some districts, very numerous, unite in bands, and commit great havoc among the sheep and cattle, but are never affected by hydrophobia.

The tenth chapter is taken up with observations which the author made upon a number of Indian nations, which had never been brought under the Spanish, or any other yoke. If we may implicitly rely on the statements of this chapter, we shall feel ourselves compelled to make large abatements from the accounts of the missionaries, and of some hasty travellers. The numbers of these indigenous

tribes, it should seem, have been much exaggerated; and the individuals of whom they are composed, do not use poisoned arrows, nor entertain any notions of religion. Their language and mode of utterance cannot be acquired by Europeans, without extreme difficulty, and a long residence among them. The idioms and structure of their respective dialects appear to be perfectly distinct, and the vocabulary of each is extremely scanty. About thirty different tribes are characterized under the more pompous title of *nations*. The *Charruas*, *Pampas*, *Guaranys*, &c. are portrayed with considerable minuteness and graphic effect; while the singular facts which are recorded concerning their manners, propensities, and habits, are not easily reconcileable with the ingenious but too refined generalizations of our philosophical historians of human society. The majority of our readers will, perhaps, concur with us in thinking that this chapter forms one of the most interesting portions of the work. We shall proceed to give some few of the leading particulars in abridgment.

There has never been an exact account of these tribes. They have been described by most writers as anthropophagi. This is not true of them. None of them now eat human flesh; nor do they recollect ever to have done so, although they are as free now as on the first arrival of the Spaniards. These tribes have no religion, notwithstanding all the statements to the contrary; they have no idols.—The Indians speak usually much lower than we do; they do not look fixedly; in pronouncing they move their lips but slightly; their accent is alternately deeply guttural or nasal; for the most part it is impossible for us to express with our letters their words or sounds. All who have succeeded in understanding their languages,—a very rare case—agree in stating that those languages are exceedingly poor. It may be calculated that there are among them thirty-five distinct dialects. The *Charruas* are a tribe that inhabited the northern shore of the river Plata, from Maldonado to the Uruguay, and whom it cost the Spaniards much blood and time to drive further north. The remnant of them which now inhabits the east of the river Uruguay, towards latitude 31 or 32, continue to wage the fiercest hostilities against the Spaniards; they are tall, erect, well proportioned, and agile, and of a colour approaching black; their eyes are small and lively; their sight considerably longer than that of the Europeans, and their hearing much quicker; they have no beard, and little hair about the body: they are to the last degree disgusting in their habits, they always sleep on their back like all the Indians whom our author had an opportunity of knowing; they go, for the most part, entirely naked; they live on the flesh of wild cows; they are invariably grave in their aspect; and have no dances, games, nor songs; they practise no forms of civility among themselves; all are equal in condition and rights. The *Charruas* gave more trouble to the Spaniards, and caused more of their blood to flow than the armies of the

Incas and of Montezuma. They were reduced at the end of the 18th century to the number of 400 warriors. They intoxicate themselves as often as they can procure brandy enough for the purpose, and often with a liquor of their own preparation.

Among another tribe, the *Minuanes*, the father and mother take care of their children only as long as they are at the breast; when the latter are weaned, they are committed to the collateral relations, and never received back.

Of the numerous nations of Indians that inhabit the immense plains to the south of Buenos Ayres, called the Pampas—the idioms are all different; they have neither religion, laws, nor games. They have, almost all, horses in great numbers, and live upon the fruits of the chase. They ride, as do most of the other tribes, bare-backed. The *Guatos*, a very small tribe, live upon the Bayou, called the Bayou of the Cross, which communicates towards the west, with the river Paraguay, under the parallel of 19° 12'. They never leave their bayou; they navigate it in small canoes, in pairs; and on the approach of strangers, conceal themselves among the rushes; their number seems to have remained stationary for 300 years.

The *Guanas*, the most numerous of the tribes of these regions, except the Guaranys, live in a species of barracks, containing about twelve families each; they are more cleanly in their habits than the rest of the Indians. Our author never saw an instance of personal deformity among them. They are without any indication of passion or feeling in their countenance and demeanour; their tone of voice is always low, and their accent strongly nasal and guttural. When the Spaniards have spoken to them of christianity, and future rewards and punishments, their answer has been that there is a being who recompenses the good and punishes the bad, but that he always favours the *Guanas*, it being impossible for them to do wrong. They live by agriculture principally. The number of women is much less than that of the men; owing to the habit of the mothers destroying their younger female offspring as soon as born, by burying them alive. The reason which they assign for this atrocity is—that the smaller the number of women, the greater their consequence with the men. The men hire themselves to the Spaniards as labourers. Their only physicians are old women, who suck the skin of the patient's stomach. When the male children reach the age of eight, they are made to undergo a severe trial of their fortitude, by having their flesh pierced with sharp bones, and they generally bear the torments inflicted, without shedding a tear, or showing any sensibility.

The *Mbayas* are a tolerably numerous tribe. They are taller and much better proportioned in general than the Europeans. The men shave all the hair from their heads. The women retain a lock of about an inch in width. Their accent is not at all guttural nor nasal, and is easy to be acquired. They use, as it were, two idioms. Both sexes give, before marriage, a different termination to

words, from that which they give to them after, and sometimes even employ a dialect altogether different. The *Mbayas* believe themselves the most noble, valiant, and honourable nation on earth, and consider the European race as much inferior. They are perpetually engaged in military expeditions, for the sake of making prisoners, whom they convert into slaves. The poorest *Mbaya* has from three to four slaves, who do all sorts of drudgery, while the master hunts or goes to war. 'When,' says our author, 'it has happened to me to offer a present to a *Mbaya*, he has generally refused it for himself; but given it to his slaves. The cacique of one of the hordes of this name—which is situated about latitude $21^{\circ} 5'$,—to the west, and in the neighbourhood of the Paraguay, when asked his age, in 1794, answered, "I do not know; but I was already married, and the father of a child, when the cathedral of Assumption was begun." This cathedral was built in 1689, and allowing the cacique to have been then fifteen, his age when questioned, must have been one hundred and twenty. When I saw him, his body was bent, and his sight somewhat weaker than that of most Indians; but he had not lost a tooth, he mounted his horse, managed his lance, and went to war like the rest. I knew, also, one of the tribe of Payaguas, of about the same age, whose teeth were in perfect preservation, and who rowed, fished, got drunk, &c. like the rest.' Most of the Indians who die a natural death, attain to a great age, notwithstanding that they are habitual drunkards. In general too, they seem to enjoy perfect health. The girls among the *Mbayas* never eat meat of any kind, nor large fish. The reason is unknown.—The women raise but one son or one daughter, and kill the rest of their offspring. They procure abortions by the most barbarous processes. When a cacique or man of distinction dies, his ornaments and arms are buried with him, and four or five of his best horses are killed over his grave.

The *Guaicurus* make a great figure in the annals of this country, and were one of the most numerous and warlike of the tribes. They inhabited Chaco, opposite to Assumption. Of this proud and powerful people, there remained in 1794, but one man, of a gigantic stature, who had associated himself to the Tobas. So deplorable an extermination is not merely the effect of the continual war waged with the Spaniards, but also of the barbarous custom of abortion among the women, whose rule it was, as with the *Mbayas*, to preserve only the child supposed to be the last.

The *Lenguas* were once a formidable and ferocious tribe; but were reduced in 1794, to the number of twenty-eight individuals. This reduction was occasioned as much by the practice of abortion as by constant hostilities. These Indians had a singular form of civility: when two of them met after some length of absence, it was considered as quite an outrage, if they did not shed a few tears before speaking to each other.—They gave their sick no remedies but warm water and fruits. If a speedy cure did not follow, they left them to die at a distance from their huts, placing

by their side a vessel of water, and denying them all food. On the death of an individual, all who were connected with him changed their names, in order, as they alleged, that Death might not know them, when he chose to look for more victims.

The succeeding chapter comprises various general reflections on these savage Indians; stated sometimes in the form of grave problems, though generally admitting of an obvious solution. That the plants, which are carelessly propagated by some of the tribes, should not be found growing spontaneously, will not excite the surprise of the physiologist, who is aware of the changes of aspect and character, which modes of culture are entailed on various species. The prevalence of the race of Guaranys, and the diffusion of their tongue, may remount to causes which are concealed in the darkness of antiquity; and the greater facility of their subjugation may be fairly ascribed to their comparative physical weakness, combined with the extinction of many of those habits which are essential to the condition of hunters and warriors, but which decay and are obliterated in the agricultural state of society. Doubts and difficulties, however, thicken in our progress, till at length, these said poor Indians are assimilated to the inferior animals.

‘The Indians, in fact, resemble the inferior animals in the delicacy of their sense of hearing; in the whiteness, cleanness, and regular disposition of their teeth; in their very rare use of the voice; in never uttering an audible laugh; in the absence of ceremony from sexual intercourse; in easy parturition, unattended with indisposition; in the most perfect liberty; in their ignorance of superiority or jurisdiction of any description; in their free and voluntary observance of certain practices, of which they can assign neither the origin nor the cause; in their want of games, dancing, singing, and musical instruments; in their patient endurance of hunger and the inclemency of the seasons; in drinking only before or after their repasts, and never while eating; in using the tongue only to get rid of the bones of the fish which they eat, and putting these bones, when separated, into the corners of their mouth; in their ignorance of washing or cleaning their bodies, and of sewing; in withholding all instruction from their children, and even, according to the custom of some tribes, in killing their offspring; in their complete disregard of the past and the future; in their dying in a state of apathy with respect to the lot of their wives and children, and indifferent about every thing which they leave in the world; and finally, in their ignorance of religion, or of a divinity of any kind. All these qualities seem to approximate them to quadrupeds, while the strength and acuteness of their vision would even suggest some degree of affinity to the feathered tribes.’

M. Azara, treats in his 14th and 15th chapters of the Spanish and mixed population. The following are some of his most interesting details concerning that population.

‘Every one knows that the present population of South America is composed of three races of different origin; to wit: Indians or Americans; whites or Europeans; negroes or Africans. From

the mixture of the one with the other, have sprung the *Mulattos* or people of colour (*Pardoz*). If the person of colour be the issue of an Indian and a white, he is called *Métis*, and the same name is given to all his posterity, provided there be no infusion of negro-blood. But the child of the African and white, or African and Indian, is called *Mulatto*; and this is the case if there be any admixture of African blood, however remote. So that the denominations of *Métis* and *Mulatto* do not, as might be thought, refer to colour, but to the nature of the origin. In some parts of America, different denominations are used, according to the degree of mixture of African blood; such as *Quarterons*, &c. but this is not the case in the countries which I am describing. The appellation of *Mulatto* is given, wherever there is the least tincture of African blood, however white the complexion.

‘ One of the means employed by the European conquerors to secure their dominion, was to intermarry with the Indian women, and declare the issue of this union—Spaniards. These *Métis* intermarried in general, because very few European women went over to America; and it is the descendants of these *Métis* who compose at present, in Paraguay, the greater part of what are called there *Spaniards*. They appear to me to have some superiority to the Spaniards of Europe, in point of stature and proportion, and even of whiteness of skin. I think, also, that these inhabitants of Paraguay have more sagacity and intelligence than the *Creoles*, that is, than the children born in the country, of Spanish father and mother. As many European Spaniards of both sexes have settled in Buenos Ayres, and allied themselves with the primitive *Métis*, the race of the latter has not remained so pure, or acquired the same advantages as in Paraguay: this is, perhaps, the reason why the Spaniards of the latter country surpass those of Buenos Ayres in size, proportion, and sagacity. According to the last census of Paraguay, there are there, five Spaniards to one mulatto; and although a like census has not been taken for the government of Buenos Ayres, it is certain, that the proportion is the same or greater. The mulattos in Paraguay are divided into freemen and slaves; in the proportion of 174 free, to 100 in servitude. The price of day-labour and manufactures in Paraguay and Buenos Ayres is higher than in the other colonies, because it is chiefly freemen who work in this way. The slaves in these countries are treated with unexampled lenity, and their situation is every way eligible in the comparison with that of the same class elsewhere.

‘ The free mulattos and negroes are placed on the same footing, by public opinion; but not so in Paraguay, by the law, which prefers to the former all other descriptions of the population. In the government of Buenos Ayres, the people of colour pay no tax as such, and have the full enjoyment of the fruits of their industry. The only difference between them and the Spaniards is, that they

are not eligible to public employments, because they are of a class reputed inferior.

‘ In the government of Buenos Ayres, the Spanish is principally spoken,—from the greater proportion of European population; but in Paraguay and the neighbouring jurisdiction of the city of Corrientes, the *Guarany* is the common language; none but the well-informed understand the Spanish. The Spaniards of all these regions believe themselves to be of a very superior order to the Indians, negroes, and mulattos; but among the Spaniards themselves, there reigns a perfect equality; there is no distinction of noble or plebeian; nothing of fiefs, entails, &c.—They have such an idea of their equality, that even if the king were to grant letters of nobility to individuals of their number, those individuals would not be regarded as nobles, or be treated with any particular distinction. From the same principle of equality, no white will consent to become the servant of another, and the viceroy himself cannot find a Spanish coachman or *laquais*. Buenos Ayres, Montevideo, Maldonado, Assumption, Corrientes, and Santa Fé de la Vera Cruz, are to be considered as the only Spanish cities of the viceroyalty. The inhabitants of the country are almost universally dispersed in single dwellings at a great distance from each other. The cities which I have mentioned, contain, perhaps, as many Spaniards as are to be found without. The Creoles or children of Spaniards, born in America, and belonging to the cities, have a decided aversion for the Europeans, and the Spanish government. This aversion is so strong, that I have known it to be operative between children and father, and between husband and wife, when the one happened to be European, and the other American. But I have not observed it among the rural population.—There are no manufactures in the country; most of the inhabitants are indebted for their subsistence to the low price of meat, and to facilities which supersede the necessity of labour.

‘ In 1793, the whole number of ecclesiastics in the diocese of Paraguay, was one hundred and thirty-four, with moderate revenues; besides one hundred and ten monks. In the same year, in the city of Buenos Ayres alone, the number of ecclesiastics was one hundred and thirty-six, besides four numerous convents. The bishops and their chapters derive the greatest part of their revenues from tythes, which are collected in Buenos Ayres even on bricks, and in Paraguay, on the Paraguay herb, although it is the leaf of a wild tree.

‘ It would be impossible for me to count the number of tribunals and public functionaries in these provinces; they have been multiplied without end. All the public revenue of Paraguay does not suffice to pay the one third of the governmental salaries. A host of supernumeraries and expectants are maintained about the public offices, and much productive labour thus withheld from the community at large. There is a scarcely a public chest in this viceroyalty which has not been bankrupt.

‘The children of the Spaniards are badly educated. They are taught by example to despise mechanical labour; they must be all monks, priests, lawyers, or merchants; or be employed under the government. Those who go to Europe, always return disgusted with the political hierarchy, to which they are called to pay obeisance there, and more enamoured of their liberty, equality, and easy subsistence. Their principal vices are, the passion for women, gambling, and among the lower class, drunkenness.—They have great shrewdness and discernment, and if they were brought to study as we do in Europe, if they had the same facilities for the culture of their minds, I doubt not but that they would surpass us. At Buenos Ayres, and in Paraguay, they are only taught the latin grammar, the peripatetic philosophy, the theology of the Thomists, and perhaps a little of canon law.

‘There are no arts or trades but such as are indispensable, and these are carried on by poor Spaniards from Europe, or the people of colour. The customs and dress of the cities are nearly the same as those of Spain. At Buenos Ayres and Montevideo, luxury prevails in a high degree; furniture is splendid; but architecture has made no progress.

‘Almost all the converted Indians, and about a moiety of the inhabitants of Paraguay employ themselves in the culture of the products spoken of in the sixth chapter, where I have pointed out the imperfection of their method and utensils: but as this calling is laborious, it is followed only by those who cannot do otherwise; the inhabitants of the neighbourhood of the river Plate disdain agricultural life, and see no use in agriculture, when they can live as shepherds, and subsist upon meat alone.

‘The cultivators, besides the grounds which they till, have what is necessary for the pasturage of their horses, cows, and the few sheep which they sometimes possess. Their habitations, placed in the middle of their lands, are not by any means so distant from each other as those of the herdsmen, or owners of herds.—In each district of the agricultural country there is a curate and a church, or at least a small chapel, badly built. The dwellings of the Spanish cultivators are but thatched log cabins, low and small. They have but few articles of furniture; but they are yet superior to the herdsmen in dress, civilization, and morality. They differ from them, moreover, in this, that they do not live exclusively on meat, and that they understand the art of seasoning their dishes.

‘There is in all the parishes of Paraguay, a schoolmaster, to whom the children go daily, even from a considerable distance. They take with them as food, some roots of manioc dressed. As there is neither regular physician, surgeon, nor apothecary's shop, every canton of Paraguay has its *curer*. This personage never visits the sick; but on festivals he takes his seat at the door of the parish chapel, where he receives the urine sent to him for inspection, from all quarters (even the distance of 30 leagues as I have seen). He decides,—after examining it, and without being told

any thing of the condition of the patient,—whether the disease comes from *heat or cold*, and dispenses his simples accordingly.—The parishes of the government of Buenos Ayres have not, universally, either a schoolmaster or curer. The old women prescribe to the sick, or they manage for themselves.'

The condition of the Spaniards who have embraced the shepherd life is scarcely superior to that of absolute savages. To every thousand head of cattle are attached a principal shepherd and a drudge, whose chief care is to gallop round the pastures once in a week, and to keep the cows and horses of the same proprietor within their allotted range: but most of their time is consumed in idleness.

According to the calculation of our author, the amount of the domestic herds is twelve millions of cattle, three millions of horses, and considerable flocks of sheep. About the sixth part of the whole is within the government of Paraguay; and the rest in that of Buenos Ayres. He does not include in the calculation the wild cattle, which he supposes to be two millions in number; nor the countless herds of wild horses. The domestic herds are divided into as many distinct ones as there are proprietors. A single pasture-ground will commonly include, in Paraguay, four or five square leagues of surface; in Buenos Ayres, this range is thought small. The dwellings of the herdsmen are in the centre, where they live with their few women in a state of promiscuous debauchery. The women commonly go barefoot, and are clothed only with a shift fastened round the body with a girdle. They are excessively dirty, and occupied chiefly in preparing the food of the herdsmen. Most of them are delivered without any assistance. Their children are taught to ride as soon as they are able to sit on the horse; they are subjected to no restraints; are wholly uneducated; have no idea of the division of time, or of any social order. Accustomed from infancy to slaughter cattle,—it appears to them quite as natural to butcher a man, even without any particular motive; the love of country is entirely unknown to them.

'As these shepherds are removed from one another to the distance of four, ten, or even thirty leagues, chapels are very thinly scattered among them, and consequently they seldom or never go to mass. They often baptize their own children, and occasionally even defer that ceremony till marriage renders it indispensable. I have myself been sometimes intreated to baptize their children, whom they would point out to me, as they galloped over the plain. When they attend at mass, they are generally seated on horseback, without the church, the door being purposely left open. They are all extremely desirous of being buried in consecrated ground; a service which the friends and relatives never fail to pay to the deceased. As some of them, however, are very remote from a church, it is customary to allow the corpse to rot in the fields, after having covered it with stones or branches of trees, without interring it; and when the bones only remain, they convey them to the priest for burial. Others take the dead bodies to pieces, detach all the flesh from the bones with a knife, and carry them to the clergymen,

throwing away or interring the flesh. If the distance does not exceed twenty leagues, they dress the deceased as if he were still alive, place him on horseback, with his feet in the stirrups, and fixing him, in this position, with two sticks, in the form of a St. Andrew's cross, with all the appearance of a living rider, they conduct him to the priest.'

In cases of sickness, these shepherds apply to a christianized Indian man or woman, to one of themselves, or to any casual passenger; and they very scrupulously observe the prescription, which is usually either a drug or a plaster, as chance may direct. The furniture of their miserable cabins is generally limited to a water-cask, a drinking-horn, wooden skewers, and a small kettle, in which they may boil water, or infuse the Paraguay herb. Some of them have a pot, one or two chairs, or a bench, and even a rude bed: but most of them sleep on a cow's hide stretched out on the ground; and they sit either on their heels or on the skull of a horse or cow. They subsist entirely on the roasted flesh of cows: but, as they eat only particular portions of the carcass, the rest is allowed to putrefy about their doors, and to generate the most offensive stench, and myriads of noisome insects. They are, nevertheless, a very robust and healthy race of men; independent; phlegmatic; insensible, on many occasions, to pain, and the approach of death; little susceptible of friendship; careless of promises and engagements; and addicted to petty thefts, but very hospitable to strangers.

'They care,' says our author, 'little about life. I have seen them go to execution with the utmost sang-froid; without the least sensibility. I have seen others, who at the instant they had received a mortal stab of the poniard, uttered no complaint, and only remarked, "*that fellow has got the better of me.*" I recollect that, on one occasion, when I was among them, a mulatto, who had heard of some offensive language used against him in his absence, by a *metis*, came in pursuit of the latter, and found him sitting on his haunches at his breakfast. He said to him, without alighting from his horse, 'my friend, I am angry with you, and come to kill you.' The *metis* did not change his position, and asked why; they continued to discuss the point with great coolness, and without raising the voice, until the mulatto alighted and killed the *metis*. There were twelve spectators, inhabitants of the country; but, according to the invariable custom, no one interfered in the dispute. On such occasions, the murderer is never molested; on the contrary, it is a point of honour to give refuge and protection to all criminals.

'These men have the greatest repugnance to domestic service; but they willingly engage in tending flocks for any master, whether Indian or negro. They never consider themselves bound, and when the inclination to depart seizes them, they say to the master, "I am going; I have served you long enough." It is always useless to attempt to stop them; they give but one answer and are off. When they play at cards, of which they are desperately fond,

they usually sit on their heels, holding under their feet the bridle of their horse, lest he should escape: they have often by their side, a poniard or knife stuck in the ground, ready to be plunged into the one with whom they play, if they perceive any cheating, in which they are not a little expert. They play for every thing they possess; after their money, their shirt; and if that of the winner be worse, he gives it to the loser, because no one keeps two. When they are about to marry, the parties borrow some linen, and return it, after leaving the chapel, when they consummate their nuptials on a cow's hide, spread on the ground.

'Some of the proprietors, or master herdsmen, sell trifles at their hovels, particularly brandy; their dwellings are, in this case, called *pulperias*, and serve as rendezvous for the inhabitants, who set no value upon money, but as it enables them to gamble and drink. They treat each other with brandy to the last farthing. There is generally at these meetings a musician with a guitar, who is well dosed, and exempted from paying any part of the reckoning. His songs are the most monotonous and lugubrious imaginable—never sprightly. These herdsmen have a natural propensity for stealing horses; they love, also, to slaughter the wild cattle without necessity. They dislike exceedingly all occupations which do not allow them to be on horseback, and at full gallop. It is laborious and irksome for them to be on foot, even to cross a street. When they assemble at the *pulperias*, they remain mounted, although the conversation and carousing generally last several hours. When they go to catch fish, they throw and draw the nets on horseback, in the water. They raise water from the wells by tying the rope to the bridle of their horse; and if they want mortar, however small the quantity, they work it up by turning their horses upon it. They are not to be matched in skill as equestrians; although they would not in Europe be thought to ride gracefully. With their *lazo* (or noosed thong) fastened to the girth of the horse, they stop and catch at the distance of twelve or fifteen toises, any animal, even a bull, by throwing the noose about the neck or legs. When at full gallop, the horse chances to fall, the rider is usually found unhurt, standing by his side, with the bridle in his hand. It is incredible how they distinguish horses, and animals in general. I had but to say to one of these men—"Look; yonder are two hundred horses belonging to me; take them under your charge."—He would look at them fixedly for a few moments, at a considerable distance, and that was enough to assure me that not a single one would be lost, or confounded with others. As guides, they are admirable for reaching at all hours, any given place by the straightest line, in immense plains, without roads, trees, or any usual means of direction.

'Besides the shepherds, there is in these plains, a multitude of roaming freebooters who will not submit to labour or service of any kind, for any reward whatever. I have met numbers of them naked, and when I have asked them if they would enter into my

service to take care of my horses, or do other things, they have replied with the utmost *sangfroid*—"I am also looking for some one to serve me; will you do it?" "Have you any thing to pay me with?" was my answer. "Not a farthing," would be the rejoinder, "but I wished to see whether you might not be disposed to serve me *gratis*."—These men are almost all thieves, and even carry off women. They drag them into the recesses of the deserts, where they construct for them a small hut like those of the Charruas Indians, and feed them with the flesh of the wild cattle in the neighbourhood. When nothing remains in the household to serve as covering, or when they feel any other pressing want, the man issues forth by himself, steals horses from the Spanish pastures, sells them in Brazil, and brings back what is wanted. I discovered and seized several of these marauders, and found the women whom they had stolen. One of these, a Spanish woman, still young and handsome, had passed ten years in such society, and manifested great reluctance to return to the parental roof. She related to me that she had been carried off by one of the name of Cuenca, who was killed by another, to whom she devolved, and thus in succession to four. She never pronounced the name of Cuenca without weeping, and remarked to me that he was the first man in the world.

A considerable proportion of the population of the countries watered by the Parana and the Uruguay, consists of reduced and converted Indians, who formed what were called the *commanderies* and the celebrated *Jesuit-missions*. Of these separate, and in part civilized communities, the jesuits established twenty-six on the banks of the two rivers just mentioned, and several in the province of Chiquitos. They had thirty villages or colonies of Guaranys, which comprised, in 1774, a population of eighty-two thousand sixty-six individuals. Nothing can be more curious or edifying than the histories of the formation and establishment of the missions. Our author when speaking of them and the commanderies, takes occasion to make the following remarks. 'The writers and philosophers of all nations seem to have conspired to say all the evil possible of the conduct of the first Spaniards towards the Indians. Very few persons know that Spain has had at all times, and has still, a voluminous code of laws of which every phrase breathes tenderness and protection to the Indians. There would be some hardihood in objecting that our laws were good, but not at all executed, when it is a matter of notoriety, that there still remain in our colonies, millions of Indians civilized or savage. We Spaniards could point out to the foreign writers, the innumerable communities and nations of aborigines which still exist in the very centre of our possessions, and we could ask the accusers,—show us those which survive in your colonies, and if there be any, let them be compared in numbers and condition with ours?' &c.

The Indians of the establishments above mentioned, were baptized, and received some ideas of religion; they were subjected to

a strict police; they were made to cultivate the earth, and taught a few mechanical arts. But in the *commanderies* they were still in partial domestic servitude, and their condition in the missions was one of lethargic pupilage. In the last, great pains were taken to prevent the Indians from holding any communication with the Spaniards. Azara speaks thus of the Indians of the *commanderies*. 'If we compare their civilization with that of the nations of Europe, it is certainly much behind hand; but if a parallel be drawn between them and the Spaniards of the viceroyalty, of the lowest class; that is, the herdsmen, the degree of civilization will be found about equal. The instruction which these Indians received from their governors, as to agricultural labours, and their more frequent communication with the Spaniards, with whom they always carry on privately, some small traffic, have civilized them more than the Jesuits have been able to civilize their Indians. Though their dwellings and churches are not so solid, or apparently so large, each Indian has his hut supplied more or less with articles of furniture, with a kitchen, and with other conveniences which were not to be seen in the *missions*. Another difference in their favour is, that they wear the Spanish dress, and that, for the most part, each Indian has a couple of oxen, some milch-cows, some horses or asses, a pig, and a few poultry. Some of the most skilful carpenters of the country are of their number. As their curates have always been selected from among the natives of Paraguay, whose maternal language was the Indian, there has been more facility in initiating them into christianity, than the Jesuits possessed in their colonies, when none but Spanish curates were employed.'

Our author gives the following account of the missions.

'The Jesuits placed in each community two of their order, the curate and vice-curate. The first occupied himself exclusively with the temporal administration of the property of the establishment, of which he was the absolute master. The spiritual direction was confided to the vice-curate, who was subordinate to the other. There was a superior general of all the missions, who had the power of confirming and ordaining.—The will of the Jesuits was the only law in these establishments. The fruits of the labour of the Indians were in common; were deposited in store-houses, and apportioned by the director. Thus the individual Indian had no inducement to particular exertion, and scarcely any scope or motive for the exercise of his reason. He was always treated as a child, and since more than a century and a half has elapsed without producing any material improvement in his character or faculties, we are to conclude that either the administration of the Jesuits was adverse to his civilization, or that he is by nature incapable of it, and fit only for the state of pupilage. The Jesuits caused deep ditches to be dug, and strong palisadoes to be formed about their establishments, maintained guards and centinels, &c. in order to prevent all communication with the external population.—They fed their Indians well; amused them with balls and feasts; they compelled them to labour only about one half of the day. The women spun cotton; coarse cloth was manufactured, and the surplus beyond the portion allotted for

the covering of the Indians, transported to the Spanish cities and there sold. The catholic worship was celebrated in the missions with great pomp; the Spanish was not at all spoken nor understood; those only of the Indians who were wanted to keep accounts, could read and write; all knew their prayers and the commandments; but there was no real idea of religion or duty, at the bottom. In the chapels the Indians conducted themselves with admirable decorum and gravity, consistently with their general character. The dress of the women was but a tunic without sleeves, tied round the middle, and that of the men a complete covering, though very slight.

‘The Jesuits watched over their establishments with a sort of paternal tenderness, as their own work and property. The administrators who succeeded the Jesuits, after their expulsion in 1768, have not the same feelings, and have reduced the Indians of the missions to a condition of hardship and comparative barbarism. These establishments are also greatly diminished in population. I will relate here some observations which I made when I visited them, to give an idea of the character of the *Guaranys* and the actual degree of their civilization.—Although these Indians are not reluctant to be invested with an office, or some show of authority, they lay it down with perfect indifference, and readily undertake the meanest functions. They have no idea of the value of honorary distinctions. Their women prostitute themselves indiscriminately. They regard thieving as a mark of spirit and intelligence, and overlook no opportunity of practising it; they never employ violence, however, nor steal objects of magnitude. They are easily moved either to good or evil; they instil no principle or maxim of any kind into the minds of their children. When an administrator wishes to have a woman or boy soundly whipped, the father or husband is selected to perform the operation, and never fails to do it well. They obey any command without reply, and generally without having any distinct idea of the matter. They love to intoxicate themselves, and seem to sustain no injury by the practice. When they are asked if they can do a thing, they always answer—no, for fear of being ordered to do it, but never hesitate when commanded. When they accompany a traveller, they never request him to stop for the purpose of eating. If you go before them and are about to lose your way, they never apprise you of your mistake. You must always keep them before and alone. They endure with astonishing patience any severity of personal hardship, rain, hunger, bites of insects, &c. When you stop to eat, they make up amply, for time lost. They love games, festivals, racing, and running at full speed on horse-back. But they take no care of their horses, and abuse them cruelly. They raise poultry and hogs, and cats and dogs without number, and leave them to find food as they can in the fields. They are slow and dirty. They are admirably patient in pain or sickness: they never complain; they have an invincible repugnance for every kind of remedy, particularly for clysters, to which they prefer death. When they feel themselves very sick, they cause a fire to be made under the hammock in which they are generally swung, and will neither speak, listen, nor take any thing; they die without the least disquietude as to what they leave behind, or apprehension for the future; they see another die, or killed, without manifesting the least sympathy, and I have observed them go to the gallows as they would go to a feast.’

A very extensive trade is carried on between the lower and upper provinces of this viceroyalty, and also with Peru and Chili. The herb of Paraguay, and the cattle and mules of the provinces of Buenos Ayres and Tucuman, form the staples of this commerce. The herb of Paraguay is in such demand, that the crop on the ground is generally sold before it is gathered. The quantity exported to Peru is estimated at 2,500,000 lbs., and about 1,000,000 of lbs. are annually sent to Chili. The remainder is consumed in Paraguay, Tucuman, and the other provinces. There is a continual demand for mules in Peru and Potosi, to carry on the work of the mines; and it is calculated that about 60,000 of these animals are annually purchased for Peru and Potosi, at the price of between three and four piastres a-head. These are driven into the interior by easy journeys to Salta, where they are taken great care of during the winter, and when in good condition, they are conducted to Potosi, where they sell for eight, nine, or ten piastres a-head; and such as are carried to Peru, sell for higher prices, some for 40 and even 50 piastres. Peru and Potosi, and the mountainous districts where the mines are situated, are also supplied with large droves of cattle from the provinces of Buenos Ayres and Tucuman. A great trade is also carried on, more especially when the usual intercourse with Europe is interrupted by war, between Peru and Potosi, and the other provinces which were annexed to Buenos Ayres in the year 1778. These provinces being the principal mining countries, are on this account populous, while, owing to their elevated situation, the climate is bleak, and the soil barren. Supplies therefore, both of subsistence and of manufactures, must be drawn from more fertile regions; and the trade in question consists accordingly in exchanging the produce of the adjoining provinces for the precious metals which form the great staple of the mining districts. Peru, Chili, and the provinces to the east, receive from the mining countries supplies of gold and silver, in exchange for which they send maize, wheat-flour, cotton, oil, pimento, sugar, hides, wax, soap, tallow, &c. baize, woollen manufactures, and articles for the use of the mines, &c.

Estalla, the compiler of a voluminous collection, which contains much valuable information on South America, called *Viagero Universal*, estimates the population of this viceroyalty at 1,000,000 of Spaniards and Creoles, besides Indians. He estimates the population of the city of Buenos Ayres at about 40,000, of whom one half are whites and Spaniards. Though reckoned the capital of the viceroyalty, it is not so populous as Potosi, which, according to Helms, contains a population of 100,000; an amount which so greatly exceeds all preceding accounts, as to render the accuracy of his information extremely doubtful. Mr. Humboldt, in his general table of the population of South America, which, however, he does not give as pretending to accuracy, estimates the Spanish and Creole population of this viceroyalty at 1,100,000; which exceeds Estalla's estimate by 100,000. Azara states the population of the province of Paraguay at 97,500, and that of the province of Buenos Ayres at 170,900. Malte le Brun, the author of the '*Universal Geography*,' now printing at Paris, rates the population of the whole viceroyalty at two millions and an half.

Don *Haenke*, who seems to have explored some tracts of this immense territory with the eye of an intelligent chemist and naturalist, adverts to several articles of native produce, which may eventually contribute to the promotion of manufactures and trade. Such are, in the mineral department, three different modifications of alum, the sulfates of iron, magnesia, and soda, pure nitre, soda, verdegris, and orpiment, all of which he has observed to occur in great abundance. The neighbourhood of the Andes appears to be peculiarly adapted to the manufacture of white glass, since it furnishes at once inexhaustible supplies of timber for fuel, and all the requisite ingredients of the composition in the greatest abundance and perfection. This gentleman next indicates three sources of wealth that are derivable from the animal kingdom; namely, the dung of the glama, guanaco, &c. from which excellent sal ammoniac may be prepared; the wool-bearing quadrupeds, as the sheep, vicugna, alpaca, &c.; and cochineal; on each of which topics he descants with zeal, duly tempered by judgment. In the course of his observations, he thus celebrates the medical virtues of the muriate of ammonia:

‘All the preparations of sal ammoniac (muriate of ammonia) are in very general use, but especially the famous *Eau de Luce*, as the genuine specific against the bites of vipers and rattle-snakes. The different plants which are vaunted in America, as powerful antidotes to these bites, such as the *aristolocia*, *anguicida*, *bejuco*, *guaco*, &c. probably owe their virtue to their greater or less quantity of ammonia, which is indicated by their disagreeable odour. A circumstance has lately occurred among the Yungas of the town of la Paz, which proves, in a convincing manner, the power and efficacy of this remedy. An Indian, who was bitten by a rattle-snake, was perfectly cured in a few days, by the external and internal use of volatile alkali alone, although he lay at the point of death, and betrayed the most dreadful symptoms. In no country in the world are people more exposed to the bite of these venomous animals than in the hottest part of America: but, at the same time, I believe no place more abounds in the materials for proper remedies. Here thousands of quintals of the substances best suited to the manufacture of sal ammoniac, and its numerous preparations, may be easily collected.

‘On this occasion I should invite the attention of physicians to the cure of hydrophobia; a disease which is very common in Europe, but hitherto unknown in South America. It is notorious that, when once the unequivocal symptoms of this dreadful malady have manifested themselves, all the famous medicines which have been recommended for its cure, as *atropa belladonna*, *meloe proscarabæus*, mercury, &c. have been found deceptive and useless. If, as is supposed to be the case in viperine poison, that of the mad dog, which is communicated to the blood by the bite, be of an acid nature, no remedy can be more efficacious nor exert a more direct action in the destruction of this poison, than ammonia, which would neutralize the animal acid: but, hitherto, I believe, the experiment has not been made.’

The case of the Indian here reported perfectly accords with some of those which were stated by Mr. Williams, in the second

volume of the Asiatic Researches, and in which the exhibition of the caustic volatile alkali is mentioned to have cured the bite of the *cobra di capello*. It is reasonable, therefore, to infer that the ammoniacal principle is hostile to serpentine poison: but that the latter is an acid is by no means proved. *Fontana*, on the contrary, was led to conclude that it is neither an acid nor an alkali. In following up the suggestions, however, which we have just quoted, it might be of some consequence to institute an accurate comparative analysis between the serpentine virus, and the saliva of dogs that are affected by hydrophobia.

M. *Haenke* lends his favourable testimony to the medical virtues of *agave vivipara* and *begonia anemoides*, and thus corroborates the result of the trials which were sometime ago made in the public hospital of Madrid, with regard to the efficacy of these plants, or of some of their congeners, in the removal of venereal complaints. He has also found the quinquina in many districts in which it was not formerly known to exist; and he particularizes various vegetable dyes, some of which might be made the objects of culture in the warmer countries of Europe.

ART. IV.—*A System of Chemistry*, by Thomas Thomson, with Notes, by Thomas Cooper. Esq. M.D. 4 vols. 8vo.

WE are glad that an edition of Dr. Thomson's valuable system of chemistry has just issued from the Philadelphia press. Of this work it is perhaps sufficient commendation that it has passed through four editions in Great Britain, while other excellent systems of chemistry were before the public, and at a time when no superficial publication could possibly preserve so respectable a standing.

The chief value of the original is not, however, in the arrangement of its matter, nor in the fulness of its instructions for correctly performing the processes of chemistry; but in the copious collection of chemical facts, and the historical reference of discoveries to their true dates and proper authors. Dr. Thomson's work is absolutely necessary to every chemist's library, notwithstanding many blemishes with which it is justly chargeable: some of these are exposed or corrected in the present American edition, and owing to this cause it is of more value than the English copy.

Dr. Cooper, the learned editor, has interspersed several notes concerning the doctrines and controversies that mark the present state of chemical science. They evince the comprehensible learning and acute mind of their author, and will much redound to the satisfaction and instruction of the chemical student.

Dr. Cooper sums up the leading features of the modern improvements under four heads.

1. A more full development and illustration of the atomic theory, and the doctrine of definite proportions.
2. The placing of chlorine, fluorine, and iodine, in the same rank with oxygen as supporters of combustion.

3. The introduction of the earths into the class of metals.
4. The introduction of silex as an acid, and of hydrogen as an acidifying principle.

Upon each of those he makes the following just observations:—

‘1. *Of the Atomic Theory*.—There can be no reasonable doubt about the propriety of adopting practically the opinion, that substances extraneous to us, are the causes and sources of our sensations; that these substances are made up principally of particles apparently homogeneous; but which in fact are composed of particles different in properties, and more simple; that all compound bodies are composed ultimately of particles which admit of no further division or analysis; and which are not only with respect to our knowledge, but which are in themselves, and absolutely, indivisible, and indecomposable. If we do not admit this, we must take for granted that the particles of matter are divisible and decomposable actually, and not merely *ex hypothesi*, ad infinitum: a proposition which seems too absurd to be practically admitted. We must therefore admit the existence of simple undecomposable particles, atoms, monads, or molecules, (by whatever name they may be designated) whereof, in different proportions, all the other particles and masses of matter, of whatever kind, are formed and composed. Here then, the foundations of the atomic theory are laid; and I presume it will thus far be generally admitted.

‘Suppose the size, the weight, or any other property of these particles, or these particles themselves, to be designated for the purpose of illustration by numbers; as, $\frac{a}{1} \frac{b}{2} \frac{c}{3} \frac{d}{4}$, and so forth: then it is manifest, that the doctrine of definite proportions must take place in chemical combination; for as by the datum, the particle *d* for instance, is indivisible, then its exponent the number 4, must be indivisible also; and two particles *dd* must be represented, not by 5, 6, or 7, but by the number 8 only; and *d c c* by 10, and so forth.

‘Admitting this—and admitting also, that too many cases of coincidence of fact with the doctrine, occur, to induce us to believe that coincidence accidental—I think we have admitted almost as much as the present state of chemical knowledge will authorise us to admit. And although I do not pretend to deny that the attempt to illustrate the theory of indivisible atoms and definite proportions by an appeal to experiment, is very desirable in distinct treatises or memoirs, until the truth shall be settled upon an immovable basis, yet I think that it occupies far more than its due share in the present *elementary* work—that in many instances undue pressure is used by Dr. Thomson, to bring his facts in contact with his theory—that the whole of the illustrations are propounded so abstrusely, as to deter ordinary readers from the study—and to leave an impression of difficulty, and uncertainty, likely to do much harm to the progress of the science—that undue stress is laid upon its present importance, whether considered as facilitating the study of the science, or its application to the objects of common life—and although I have endeavoured from Dr. Prout’s papers to furnish some steps of the ladder on which Dr. Thomson has mounted, there still remains an appearance, of esoteric mystery in his illustrations and calculations, that may well induce the reader to suppose they are meant only for the initiated. I have endeavoured to make some of them more readily intelligible; but

I cannot help thinking that they might in great part have been dispensed with, in an elementary publication.

‘2. *With respect to Chlorine, Iodine, and Fluorine.*—The whole of sir Humphrey Davy's doctrine respecting the simple nature of chlorine, so well calculated to throw confusion among all our most established notions of chemical theory, has been implicitly adopted by Dr. Thomson, without one intimation of the disputable character of this theory, or any account or even notice of the experiments of Drs. Bostock, Trail, and Murray. This is, I apprehend, a culpable neglect on the part of Dr. Thomson; who ought to have informed us, that men of science in his own country were far from adopting implicitly the doctrines he has taken for granted as settled; and to have informed us briefly, of the facts upon which that doctrine was disputed. I think in this omission, he has done injustice to men of great eminence among his cotemporaries; as indeed he did to Dr. Higgins, by omitting that gentleman as the first proposer of the atomic theory: an omission which does no credit to Dr. Thomson, or to his friend Mr. Dalton, who certainly ought to have noticed the prior claims of Dr. Higgins, to be found in his “Comparative View” of the phlogistic and anti-phlogistic theories of chemistry, that occasioned so much discussion a few years ago.

‘Since Dr. Thomson published this edition, the experiments of Dr. Murray, and Dr. Ure of Glasgow, seem to me to have completely overthrown the whole system of sir Humphrey Davy on the subject of chlorine; and to have restored the old fashioned explanation of Berthollet; which is likely to prove itself, as true, as it is plain and intelligible.

‘For the same reason that chlorine seems to combine with oxygen during the process of procuring it, so may iodine and fluorine: and we are likely to be brought back to the elegant simplicity of the Lavoisierian doctrine, that the only supporter of combustion is oxygen; a change by which, if it can be supported, little will be lost.

‘I have endeavoured to state the argument on both sides, in a way intelligible to the students for whose perusal this edition is designed: and it is manifest, that Dr. Thomson's view of the subject would not be perfectly correct, though sir Humphrey Davy's notions thereon should be considered as true; for even in that case, the modern doctrine ought not to have been stated and propounded in such a way as to induce the reader to suppose, that it had been adopted without opposition.

‘3. *As to the introduction of the Earths among the Metals.*—I have seen and made potassium too often, not to be aware of the metallic appearance of that substance—of its apparent amalgamation with mercury—of its attraction for oxygen, and the probability that caustic potash is the oxide of potassium. But these characters are not peculiar to these metalloids: the lustre of pyrites and of the Chinese yellow orpiment is as metallic and as brilliant as potassium; but for accuracy's sake, let us settle what we mean by a *metal*, before we call these substances metals. Hitherto, the leading feature of a metal has been its weight; but the alkaline metalloids are the lightest of all solids—hitherto, the oxide of a metal has been deemed without a contradictory instance, lighter than the metal itself; here it is heavier—hitherto we have found every metal apt to combine and form an alloy with almost every other metal; in the present instance we can hardly yet say it has alloyed with any thing but mercury. I am not prepared to deny any of the *facts* stated, but in an elementary work we should alter our definitions at least to suit the case.

' 4. *The acid character of silex, and the acidifying character of hydrogen.*—I have the same observaton to make on this head. Let us alter our definitions, and I agree that silex is an acid. But while people will persuade themselves that acids are sour to the taste, they will not understand the mystery of calling a piece of flint an acid. I hold the talents and industry of Berzelius and sir H. Davy in high respect: they are men eminent for their ingenuity in devising, their skill in conducting, their patience in pursuing, and their acuteness in deducing conclusions from experiments; but each of them has contrived to acquire a reputation, in which a love of novelty and paradox seems somewhat to intermingle. But I would speak with great deference, of men who have done so much, so well.

' With respect to the acidifying character of hydrogen, I am not yet prepared to regard it as irrevocably settled: even though Dr. Murray, in his late paper on the theory of chlorine (Edinb. 5th Jan. 1818), seems willing to suppose that the *elements* of water, and not water itself, enters into the chemical constitution of muriatic acid; and that the water obtained is formed during the process of obtaining it. The theory is ingenious: but I see nothing that is gained by substituting ternary for binary combinations. The facts are as well explained on the latter, as on the former theory; and till new facts inexplicable on the old doctrine be discovered, I see no good reason for embracing a new one.

' With respect to sulphurated hydrogen, (the hydrothionic acid), and cyanogen, their acid characters are so dubious, that Dr. Murray certainly talks in too strong language when he says in his late memoir that sulphur forms with hydrogen a substance *unequivocally* acid. It takes away the colour of paper blued by litmus, but without turning it red. That it combines with alkalies, is no more than sulphur does without the aid of hydrogen; unless indeed water be decomposed during the combination. But a part of the sulphur in obtaining sulphurated hydrogen, may well be oxygenated by the atmospheric air contained in the water employed during the process of making this gas—or even a part of the water itself may be decomposed and furnish its oxygen. These are difficulties in the way of the modern theory, which must be surmounted before Dr. Murray's opinions find full credit. No investigation of them has yet taken place to my knowledge. The same may be said of cyanogen and the other hydrogen acids. Are we sure that the water employed has not furnished oxygen in one or other of the ways just suggested? The perusal of Dr. Murray's very important *Experiments on muriatic acid gas, and his Observations on muriatic acid and on some subjects of chemical theory*, which arrived while this preface was at the press, has led me to make these observations, which otherwise might better have appeared perhaps in the form of notes.

' On some or all of these points, Dr. Thomson's work required notes of explanation, notes of doubt, and notes of contradiction. Notes also of addition, where new facts worth registering have occurred since its publication. I have endeavoured to supply these to the best of my ability, though sparingly.* After all, this System of Chemistry is not only the work of one of our most skilful chemists, and ablest compi-

* In classing the new minerals, not having had the opportunity of seeing them, I have been compelled to take their chemical analysis as furnishing the only analogy I could venture to follow. T. C.

lers, but it is also the only compilation which gives us the present views—the modern facts and doctrines of the science: nor are we likely soon to receive another unless from the same hand, when the additions of some future years of investigation shall require a new summary of the facts. Among the improvements devoutly to be wished, is some regular system of nomenclature, less abstruse than the present one; for if every student of chemistry and mineralogy hereafter is required to be a profound Greek scholar, I fear the votaries of this most engaging science will be often deterred from the pursuit: and we shall be inundated elsewhere as we are threatened to be in this country, with theories fabricated not in the Laboratory but the Lexicon.

‘I make no apology for differing in opinion from my author. His well earned reputation will not be shaken by these remarks, even in my own opinion. The most able men are liable to error, and acknowledge it generally with a promptitude in direct proportion to their real merit.’

We have taken this copious extract from the editor’s preface not only because it gives a judicious view of the merits and defects of the original work, but also of what he has done to amend the latter. To which we must add, as quite necessary to have been performed, the condensed representation of the atomic theory, placed at the end of the first volume. It is satisfactory and well executed as far it goes, and we wish it had been more ample; for we think highly of this point of chemical doctrine, and wish to see it taken up by some person competent to the arduous task, who would embrace the whole in one perspicuous essay.

ART. V.—*The Physiognomist: a Novel; by the Author of the Bachelor, and the Married Man. In 3 volumes, 12mo.*

WHATEVER may be the merit of the execution, there is certainly merit in the conception of this novel. The *Physiognomist* is an hitherto unhackneyed character, and capable of being portrayed, greatly to the amusement, and not a little to the instruction of the reader. Such a portraiture might easily be confined to the abuse of physiognomy, without touching the real foundations of the science; which although in its infancy as yet, from the want of observations, and a due classification of facts, satisfactorily ascertained, is by no means so groundless as superficial reasoners are apt to imagine. Physiognomy is daily gaining new votaries among men of science, and promises fair to exhibit at some future day a series of coincidences which will no longer be considered as fanciful or accidental.

The author of the present novel, seems fully aware of this, as we may judge from his preface.

‘On presenting this work to the public, the author feels anxious to make some observations on its intention:—

‘They who infer from its title, that it contains a *general* ridicule of physiognomy, will be deceived. Those profound researches, which can alone lead to conviction on such a subject, are not within the province of the author, and he disclaims any wish—any attempt to ridicule a subject, the evidences of which he is unable to examine or appreciate.

‘It will, unhesitatingly, be admitted, that every one is, in a degree, subject to the influence of physiognomy. *Rules* have been laid down for the study of it; and though its principles formerly appeared too vague, and its conclusions too uncertain, to furnish matter for more than amusement, yet later authors, by connecting it with anatomy and physiology, have given it an elevated rank in the scale of science. The form it now assumes, is indeed, grand and imposing:—it is clad in a magnificent garb, splendid to the eye of fancy, attractive to the eye of reason. If the enthusiasm of its professors has made some of its inferences appear visionary, it must, at the same time, be remembered, that many of its discoveries are supported by the soundest principles of reason—demonstrable to those whose minds, by a previous course of study, are prepared to investigate them. To address these evidences to those not so qualified to decide, would be as absurd as if Apollo had addressed lectures on pharmacy to the herds of Admetus!

‘A superficial acquaintance with this subject is easy of attainment: it inflates its possessor with preposterous ideas of his superior powers of perception and discernment; and he persuades himself that from a slight observation of the external structure he possesses ability to deduce a correct analysis of the faculties! Such is the prevalence of this opinion, that almost every society has some sagacious charlatan who, on the first glance at the head of his neighbour, pronounces, with the easy impudence of self-complacency, that he is incapable of any thing great or elevated: his penetrating eye can see the destiny of the man written in his countenance, and can prescribe bounds to the achievements of his life by the magnitude of his forehead! Is not such an one meet food for ridicule?’

It must be acknowledged that this is a legitimate use of satire.

Physiognomy as a science, very early attracted the notice of thinking men. *Pythagoras* and his disciples professed and practised it. (Aul. Gell. l. 1. c. 9. Proclus in Alcib. prim. Plat. Jambl. in vit. Pythag. sub initio.) *Socrates* defended the physiognomist, Zopyrus, who gave a bad character of his propensities from the lines of his countenance, (Cic. de Fat. V. Tusc. quest. XX. 4.) and *Plato* mentions it with approbation (in *Timæo*). Indeed it is hardly possible that the coincidence between features and temper, and features and intellect, should not have been remarked in a very early age; because, in fact, it is founded in nature. *Aristotle*, beyond all doubt, the ablest man that science has hitherto known, or history recorded, wrote a treatise on physiognomy, which is probably genuine, as *Diogenes Laertius* cites it in his life of *Aristotle*. The other Greek authors on the subject, whose remains have come down to us, have been collected and published at Altenberg, in Germany, in 1780, under the title of *Physiognomiae veteres scriptores Græci*, in one pretty large volume, 8vo.

Among the Romans, physiognomy had its professors, who disgraced it by prognostications of future events, just as the astrologers of the day disgraced astronomy. Thus, *Pliny the elder*, relates at second hand, from *Apion*, a story of *Apelles* to this purpose: *Imaginem adeo similitudinis indiscretæ pinxit, ut, mirabile dictu, Apion grammaticus scriptum reliquerit, quemdam ex facie hominum*

addivinantem; quos metaposcopos vocant, ex iis dixisse aut futurae mortis annos, aut praeerita. Pl. l. 35 § 35.

Cicero likewise seems to have been somewhat addicted to the science of physiognomy, so far as character could be reasonably conjectured from features and manners. Physiognomy, says he, is the art of discovering the manners and dispositions of men, from observing their bodily characters, the characters of the face, the eyes, and the forehead: *hominum naturas, moresque, ex corpore, oculis, vultu, fronte, pernoscere.* *De Fato, V.* In his oration against Piso, he gives us a specimen of physiognomical abuse, that would hardly be borne at the present day. *Famne vides bellua quae sit hominum querela frontis tuae? Nemo queritur Syrum nescio quem de grege novitiorum, factum esse consulem. Non enim nos color iste servilis, non pilosae genae, non dentes putridi deceperunt. Oculi, supercilia, frons, vultus denique totus, qui sermo quidem tacitus mentis est, hic in errorem homines impulit; hic, eos quibus eras ignotus decepi fefellit, in fraudem induxit. Pauci ista tua lutulenta vitia noveramus * * * obrepisti ad honores errore hominum, commendatione fumosarum imaginum, quarum simile nihil habes praeter colorem.* In the same strain he appeals to his auditors against the physiognomy of C. F. Chærea, in his oration in favour of Roscius the comedian. *Caium Fannium Chæream, Roscius fraudavit!! Oro atque obsecro vos qui nostis, vitam inter se utriusque conferte—qui non nostis, faciem utriusque considerate—nonne ipsum caput, et supercilia penitus abrasa, olere malitiam, et clamitare calliditatem videtur? nonne ab imis unguibus usque ad verticem summam (siquam conjecturam affert hominibus tacita corporis figura) ex fraude, fallaciis, mendaciis, constare totus videtur? Qui idcirco capite et superciliis semper est rasis, ne ullum pilum viri boni habere.* These are curious instances of ancient oratorical abuse worth perserving; and other similar passages may be found collected by the author,* from whose essay we have borrowed the preceding. The remark of Julius Cæsar on the physiognomy of Antony and Cassius is well known, and the physiognomical description of the emperor Tiberius, by Suetonius, is very strongly marked. Indeed the Romans had several physiognomic expressions in common use: as *homo. crassa cervice, acutis naribus—adunci naris—risum suspendere naso.* The Hebrews (as Gilbert Wakefield somewhere remarks) expressed patience, by a *long nose.* So in English, we have, thick head, thick skull, paper skull, supercilious, white-livered, sanguine, &c.

About the time of what are called the dark or middle ages, when all knowledge† is supposed to have been quiescent by those

* Essay on Physiognomy, by Thomas Cooper, Esq. 3 Manch. Trans. 408.

† To the dark ages as they are called, we owe the first notions of chemistry and chemical experiment—the first notions of materia medica—the truly original and sublime style of Gothic architecture; for although the pointed arch be Saracenic, and Hindoo, the architecture called Gothic, belongs exclusively to the European builders of the middle ages; and if it be inferior to the Greek in

who read superficially, physiognomy became connected with astrology, magic, and the doctrine of Signatures: of course, it experienced a common fate with its companions; and when increased knowledge rejected the latter, the former was received also with very suspicious and equivocal civility. Nor did the dogmatical precepts of Baptista Porta, Cardan, Fludd, Alsted, Le Chambre, and other votaries of the science, preserve it from the contempt of after ages. In England, little attention was paid to it, unless indeed by Evelyn, Gwither, and Parsons; nor did the discussions of Pernetty, Le Cat, and Formey, in the Berlin transactions, bring it into vogue.

At length appeared the magnificent, and interesting, but fanciful work of Lavater, which having been translated into all the languages of Europe, is too well known to be dwelt on here. It is a very desultory, but very animated work, which leaves an impression on the reader, that there is too much truth in physiognomy, to warrant us in rejecting it altogether. *Lavater* adopts the facial line of *Camper*, as designative of intellect: but there is no reason that we can find, why the occipital line of *Daubenton* should be excluded from osseal physiognomy; for the back part of the head is of equal importance in this point of view, to say the least, with the anterior portion of the human cranium. *White*, of Manchester, also, in his treatise on the Gradations of man, adopted the facial line; and his plate of cranial comparison between the European, the Asiatic, the Negro, the Ouran-outang, the Baboon, the Ape, the Dog, and the Bird, if it be not conclusive, is at least very plausible and very curious. His book was written to show the anatomical differences between the negro and European in particular; and to prove them belonging to two distinct races of men: but considering that the offspring of each may intermix, and that the offspring of the intermixture propagate, there is no sufficient authority from physiological reasoning, to suppose them other than varieties of the same species; following in the reasoning upon this subject, botanical analogy. Indeed, the question is of little importance, even in a theological point of view; for those who are most desirous of acceding with implicit reverence to the accounts presented to us in the sacred text, may well doubt, whether other persons, men and women, were not contemporaneous on the surface of our earth, with Adam and Eve: for Cain's exclamation, that 'every one that findeth me shall slay me,' and his emigration to the land of Nod, on the east of Eden, where he took a wife, and had children—furnish reasons for believing that other parts of the globe might have been peopled contemporaneously with those who are considered as *our* first parents. We state this merely as a doubt, suggested by the inspired writer himself.

taste, it is far superior in architectural skill, and harmonious appropriation to theological purposes. To the middle ages we owe, after Aristotle, the most acute and numerous examples of syllogistic argument, and philosophical distinction—and forms of government, though inferior perhaps to the Greek republics, superior, certainly, to Roman despotism.

Camper's facial line, is a line drawn from the forehead to the upper lip: and he supposes that the degree of intellect increases, as this line approaches a perpendicular; and decreases vice versa. *Lavater*, *White*, *Cuvier*, and *Richerand*, agree with him. *Gall* and *Spurzheim*, who consider the occiput of so much importance, deny his conclusions.

The occipital angle of *Daubenton*, is formed by a horizontal line drawn from the inferior edge of the orbit, to the posterior edge of the occipital foramen, and by a vertical line that cuts the first, and passes between both condyles over the surface of the occiput. The plates on this subject, published by *Camper*, *Blumenbach* and *White*, are curious and instructive.

Sommering and *Cuvier*, instituted another mode of comparison of intellect, viz. by the size of the brain compared with the size of the face: *Bichat* and *Richerand*, have also thrown out the idea, that there is a proportion between the intellectual faculties and the length of the neck; on the supposition that the activity of the cerebral energy is decreased by being further removed from the action of the heart: but this is manifestly fanciful and unfounded, either in physiological reasoning or experience: and it seems directly opposed to the old opinion of hebetude being connected with a thick neck, *crassâ cervice*. Nor is there any proof whatever, that acuteness and apoplexy have the slightest connexion.

The subject seemed to rest for many years,* when *Dr. Gall* and his coadjutor *Dr. Spurzheim*, proposed their opinions, founded as they asserted, not merely on physiological considerations, but on innumerable facts and coincidences, carefully observed: inducing them to conclude, that human propensities depend in great measure on the form of the skull, which is enlarged according to the enlargement of those portions of the cerebrum and cerebellum, that in the order of nature are essentially connected with these propensities. Whatever may be thought of their craniographical system, certain it is, that they are not exceeded by any anatomists whatever, in their minute and accurate knowledge of the anatomy and physiology of the cranium and its contents: nor do we know that any anatomist in Europe or America, has arrived at, or pretended to equal skill in the mode of developing the texture of the brain, and particularly of the medullary substance of it, with these professors; by whom it has been exhibited (as we understand, from information only), with unexampled dexterity in one continuous cellular tissue: but by what process we are unable to describe. These gentlemen give their method of determining the functions of the brain, thus:—(Physiognomical system of Doctors *Gall* and *Spurzheim*, p. 214).

‘In every function we may distinguish its energy or quantity, and its modification or quality. It is very difficult to examine the modifications, but more easy to distinguish the different energy of

* Stat. Geo. 2, c. 5, anno 1741, denounces all persons who pretend to have skill in physiognomy, palmistry, and like crafty sciences, as rogues and vagabonds.

the functions. Let us then examine on what conditions the energy of the functions of the brain consist. There is a general law, that the energy of the functions of any organic part, depends on its size, and on its organic construction; that is, on its extensity, and intensity. It is also certain, that in order to judge of the degree of activity of the faculties, it is necessary to consider, besides the extensity and intensity of the organ, the exercise of every faculty, and their mutual influence on each other. Now, among these conditions, the most easy to be observed is the size of the organs. As, then, the energy of functions, depends on the size of their organs, and as the size of the organs is most easily distinguished, it results, that these means are the most proper for discovering the functions of the brain.

‘There is, indeed, throughout all nature a general law, that the properties of bodies act with an energy proportionate to their size. Thus a large loadstone attracts a greater mass of iron than a small one of a similar kind; the fermentation of a fluid, is more energetic, as its quantity is more considerable; a great muscle of the same kind is stronger than a smaller one. If the nerves of the five external senses, be larger on one side of the body, the functions are stronger on that side. Why should it not be the same with respect to the brain?’

To this reasoning of Dr. Spurzheim, we may add, that all physiognomy of external feature is owing to the same law. Thus, each muscle of the face, is acted on by the appropriate passion or propensity for which nature has designed it. The muscles of the eyebrows are swelled and drawn downward by intense thought: so are the muscles at the corners of the mouth: so are the muscles of the forehead: but in proportion as these muscles are more frequently used and brought into play by mental energies and propensities, they will swell, and to a certain point, will permanently increase in size: just as is the case with any muscle more exercised than others, as the arms of a blacksmith or waterman, the legs and shoulders of a porter, &c. but this permanent swelling, is a permanent increase of comparative size; that is, it is a prominent visible feature, originating from mental energy and habit, exerted upon their appropriated set of muscular fibres.

Let our readers imagine to themselves the following face: a man middle aged; forehead expanded; muscles of the forehead marked; eyebrows projecting; muscles of the eyebrows thick; large indentations on each side the nose; muscles of the eyebrows contracted in conversation; lips compressed; line of indentation on each side of the mouth directed downward. Is there no mark of energy of character and intellect in such a face?

Another:—forehead low; smooth; arched eyebrows; muscles of the eyebrows thin, smooth; large space between the eyebrow and the eye; eyes prominent; face round; smooth; lips open, gaping, showing the teeth; line about the corner of the mouth directed rather upward. Is there no mark of comparative imbecility? Draw upon paper, a gaping, staring, country clown.

It has often occurred to us, that the lines of Darley's well known song, is descriptive of Idiocy.

Her mouth with a smile
Devoid of all guile
Half open to view,
Is the blush of the rose
In the morning that grows
Impearl'd with the dew.

If these remarks be true, then there is truth in physiognomy as a science. Indeed, if it be not so, what painter can delineate character? or who has not seen an actor on the stage harmonize his features to the expression of habitual, natural folly, and rustic ignorance? or who is there, who is not in fact to himself, a physiognomist by habit? who does not pass a mental verdict on the appearance of a stranger? we are all such:—nature has dictated the practice, and it is the business of art to scrutinize, observe, and methodize, the traces that nature presents to us. Is it not evidently so, that character is expressed by countenance, figure, motion and manners, not merely in the human species, but as we know from familiar practice and observation, in horses and dogs? In fact, how can mind show itself, but by means of body?

Since the publication of Dr. *Spurzheim*, I know of none but a small treatise in octavo, entitled an attempt to establish physiognomy upon scientific principles, by Dr. *John Cross, of Glasgow*. He gives us a discourse on the vital functions and on pathology preliminarily: he then treats physiognomically of the neck, the mouth and nose, the ears and eyes. There is much good sense in the book, but the language is careless; and it cannot boast of profound research.

Having now presented our readers with a slight sketch of the history of physiognomy, and the most reasonable of its pretensions, we proceed to the work before us. But we have little to say, in praise, either of the ingenuity of the plot, the novelty of the characters, the interest of the situations, the amusement, or instruction of the dialogue, or the elegance of the language. The person who gives name to the novel, is *outré*; the distinguishing trait is described beyond the probabilities of common life; and all the other characters, are without any character at all, but what we find in almost every similar production that issues from the press. That our readers may in some degree judge for themselves, we offer for their perusal the following scene, wherein the physiognomist Mr. Ossaman, is introduced to a quaker family of the name of Bertie.

“Thou hast a kind heart, Grace,” said Cyrus Bertie, affectionately, patting her head, and thanking her in his heart for thus defending what he himself felt to be INDEFENSIBLE.

“But a weak head, I fear,” added Mr. Ossaman, approaching the smiling Grace, and drawing out his paper of angles, cones, sections, pentagons, hexagons, heptagons, &c. &c., to be more fully convinced that his opinion was correct. The next cap which Grace wore obstructed his view, and without hesitation he pulled it off.

“What art thou doing, friend?” said she indignantly.

"Why uncoverest thou my daughter's head?" demanded Mrs. Bertie; "verily, the damsel must not be insulted, neighbour; and, *besides*, thou hast thrust thy fingers through the muslin."

"Nonsense!" exclaimed Mr. Ossaman; "I wish to be convinced if the young lady were likely to do honour to me if I patronized her."

"Why, surely, friend," rejoined Grace, "thou couldst not ascertain that point by the colour of my hair; and surely for that reason thou didst pull off my cap."

"Miss Bertie—I say, miss Bertie—you have mistaken my design *in toto*. I wish to compare the linear compartments of the *os cerebrale*:—I intend to measure the extent of the occipital line. I will minutely examine the region of propensities, and observe whether the organ of *love of approbation*, or of *self-esteem* is the more developed:—the upper and lateral part of the head, posteriorly, is the situation of the former; consequently, the line A. B. drawn in this direction, extending to the point C. on the posterior exterior angle formed by the points C. D. E., and the line F. G. crossing the line D. E., transversely, forming a second angle of the points E. F. G. the point B. being the central point; and — and — designating the point B. as the — the — Mr. Cyrus Bertie, you have embarrassed my ideas by incessantly shaking the table. I must begin my analysis again, or miss Bertie will not understand the demonstration."

"Thou needest not to trouble thyself again, friend," said Grace; "for verily, thy words are incomprehensible."

"So I feared, so I feared. You perceive, Mr. Cyrus Bertie, how your *fidgetting* motions disturb us."

"Thy geometrical proofs advanced in support of an obscure question, would, perhaps, tend to convince. But, where no position is advanced, and where, consequently, no contradiction can be made, thy geometry is of no use; except, indeed, thou wishest to show thy skill," said Grace, archly.

"Ah! my estimate was correct," said Mr. Ossaman decisively; "your *os frontis* is sufficiently contracted to render further investigation unnecessary. Yes, you are destined to move in the ordinary tract. The attempt to rescue you from such contemptible security would be vain. Mr. Bertie, marry your daughter when you please, and to whom you please. I resign all hopes of her reflecting credit on me; therefore I cannot patronize her."

In our opinion, if the character of a physiognomist is to be successfully delineated, he must not be painted as a silly dupe, or an offensive madman. The situations to be interesting, must be drawn from the mistakes and eccentricities of a fine mind, warped, but not deranged by intense application to an object of science, whose doubts have vanished before ardour of pursuit; and where plain sense has given up the reins to the extravagancies of a warm imagination. Mr. Ossaman offends us too much, by his constitutional folly, and his disgusting ignorance. We feel no interest in a blockhead born to be a dupe. We cherish no pity for him, and no indignation at the bungling knavery by which he is plundered and deceived. A novel cannot be a good one, where the principal character is without interest, and his conduct beyond the limits of common probability. Such is the physiognomist portrayed before us.

T. C.

ART. VI.—*Notoria; or Miscellaneous Articles of Philosophy, Literature, &c.*

The following remarkable *epitaph on the Spanish Constitution*, was composed not long since in Madrid by a Spaniard, and lately reached this country enclosed in a private letter.

Aqui yacen,
sin esperanzas de la resurreccion,
los restos
de la Constitucion Politica de la monarquia Espanola,
Nacida entre los movimientos convulsivos de una Revolucion
Que por la uniformidad de sentimientos y de impulso
Rompio las cadenas del Despotismo, y dio Libertad a
un encarcelado
Rey,
Prometio seguridad, ciencia, y prosperidad
à un pueblo
que nunca estuvo ilustrado por el racionio,
elevado por la tolerancia, ni exaltado por la libertad:
El primer esfuerzo
Del restaurado Monarca fué aniquilar el
Instrumento
Que derramó el esplendor de gloria sobre la
nacion.
Y el pueblo falso à sus juramentos
al mundo y la posteridad,
Fué el co-operador voluntario de su destruccion,
Y abandonando vilmente esta legitima
prole de la libertad
à las manos de su verdugo
Manifestó al genero humano
Que ninguna Nacion puede ser libre
que no sea merecedora de la
Libertad.
Esta Constitucion
fué precoz y indigesta,
Pero à pesar de sus faltas
era la piedra angular, sobre que
Un majestuoso edificio
podria haber sido elevado.
Si el pueblo hubiese sido consequente consigo mismo,
su pays huviera llegado à ser formidable
y sus derechos respetados;
Las ciencias havrian sido cultivados
las artes protegidas
y la Nacion
Libre.
Ahora
Sumergida en tinieblas, supersticion y fanatismo
Presenta al mundo el humillante
Quadro
de una Nacion
Abrazando voluntariamente el Despotismo
y poniendose à si misma
los grillos de la
Tiranía.

Lector
Aprended en este exemplo

La inestabilidad de todas las instituciones mundanas,
 y estad seguros
 Que los fundamentos de la grandeza nacional
 son
 Virtud, Libertad, y Independencia.

—
 Here lie
 with no hopes of resurrection,
 The Remains
 of the political Constitution of the Spanish Monarchy.
 Born amid the convulsive throes of a Revolution,
 which by an unity of sentiment and action
 Broke the chains of despotism, and gave liberty to
 an enslaved
 King,
 It promised security, knowledge, and happiness
 to a people,
 Who had never been enlightened by reason,
 elevated by toleration, or vivified by freedom,
 The first effort
 of the restored monarch, was to crush the
 Instrument,
 which shed the only ray of glory on the
 Nation;
 and the People, false to their oaths,
 to the world and posterity,
 were the willing instruments of its destruction:
 And basely surrendering this legitimate
 Offspring of liberty
 into the hands of its executioner,
 have satisfied mankind,
 That no Nation can be free,
 who are undeserving of
 Liberty.

This Constitution
 was crude and undigested;
 Yet, with all its faults,
 It was the foundation upon which
 a noble structure
 Could have been raised.
 Had the people been true to themselves,
 their Country would have been formidable,
 and their rights respected;
 Science would have been advanced,
 the Arts patronized,
 and the Nation
 Free.

Now
 Enshrouded in darkness, superstition and
 Bigotry,
 They present the humiliating picture to
 the world,
 of a Nation,
 voluntarily embracing Despotism,
 And fixing on themselves
 the shackles of
 Tyranny.

Reader
Learn from this
The insecurity of all earthly institutions,
and be assured
That the foundations of National Grandeur
are
Virtue, Liberty, and Independence.

The following letter on Spanish affairs is translated from one of the numbers for July last, of the *Minerve Française*, a periodical work of high authority published at Paris.

Madrid, June 1818.

I write to you without having any news to give you: the most apathetic men of a country, where you find the very sublime in the way of apathy, begin to be sensible of the sterility of our single and *unique* Gazette. The situation of Spain would furnish rather a chapter for history, than an article for the *Minerva*. The *ensemble* of things may be very well worthy of attention; but the details do not deserve to be noticed.

All Europe is at peace, Spain alone excepted. She is condemned, by the usual fatality of her fortunes, to wage war without any real object and almost without hope of success. We are fighting in the provinces of New Grenada and in Peru;—the insurgents of the river Plate persist in proclaiming their independence, and publish ponderous and vehement manifestoes against the mother country, who is idly boasting of the good she has done them;—Spanish blood, after having flowed in torrents in the peninsula, daily drenches the vast plains of the two Americas;—the United States seem to ask war from us as the only favour we have to bestow on them:—the court of Brazil even, with which we had just contracted close family ties, has taken possession of one of our most important posts, and, as it would appear, covets the neighbouring territories within her reach;—our European coasts are infested and insulted by buccaniers, in whom we can distinguish rebellious children of our own family, by their language and their habits;—we are reduced to the wretched necessity of carrying the most desolating hostilities into the countries to which we gave the civilization which they enjoy;—we have been obliged to receive from the navy-yards of Cronstadt some few fir-ships to trans-

port our forces to the ungrateful colonies; the magnificent fleets of cedar, which, towards the end of the last century, rode so majestically in the harbours of Cadiz and Carthage, and promised us destinies so splendid, no longer exist.

Our late unhappy divisions have left behind many bitter recollections. Exile has deprived us of a multitude of distinguished citizens, who might still serve their country. Others who had given way to an excessive enthusiasm, which it is difficult to condemn, when the epoch and the motives are considered, are equally cut off from society. Our finances have experienced no amelioration, and the grave personages charged with sounding the depths of their wounds, maintain an ominous silence. Is it, in fact, possible to recal the royal decrees which, in 1814, restored to the religious orders all the property and estates which they had lost?—We are abridging our military establishments; what remains is scarcely sufficient for garrisoning our strong places in time of peace.

Nevertheless, the old peninsula opposes a compact mass, an impenetrable surface to all these strokes of fate. She resists; she does not succumb. The idea of a new and general contribution has not alarmed us. The nobility, clergy, people, manifest the same resignation. We are so much accustomed to the depreciation, the nullity of the public debt, that no measure of whatever kind with respect to it, would excite complaint or surprise. Is this the effect of a consciousness of real wealth and strength, in Spaniards? or does it spring from a general torpor? It is very difficult to know public opinion, if, indeed, there be any such thing in a country like this. *Impounded* from village to village, from province to province, isolated in body and mind, we can hold no communication with one another. The inhabitant of Arragon is more of a stranger to the inhabitant of Galicia, or of Andalusia, than a quaker of Penn-

sylvania is to the mufti of Constantinople.

Two periodical publications, with the titles of *Minerva* and *Chronicle*, appear here at short intervals, and give us meagre extracts from theatrical pieces, and from works of science and literature published abroad: these wretched compilations have about twelve or fifteen hundred subscribers at the most. Our official gazette is issued three times a week; you know what it is: it contains official news of our own court; summary accounts of the official news of other courts, and private advertisements. The *Mercury* recapitulates weekly the ordinances and circulars of government, and reproduces obsolete political articles selected with all due, and truly admirable discretion.

These slight matters are sufficient for our wants; for, of all the nations of the continent, the Spanish, such as authority would have it, concerns itself the least with its own affairs, or with those of others. Our imagination is fed by recollections. We discourse much of what our ancestors have done. In respect to literature, our authors appear to us incomparable; our theatres suit us; our national histories are truth itself in our estimation. You understand that I speak of the mass;—in general. But here the exceptions are fewer than any where else, and hardly to be counted. We are pitied abroad: this is an error of charity. We do not suffer; we are satisfied with ourselves, and with the condition in which we are. With still less, we should think nothing wanting. Before our last war and according to the last general tables of statistics published officially in 1803, now under my eyes, we were ten millions three hundred and thirty one thousand one hundred and twenty natives; and our territory is as large as that of France; our capital was valued at three hundred and ten millions six hundred and sixteen thousand three hundred and four hard dollars, and two rials. We gathered annually thirty three millions of *fanegas*, (100 wt.) of grain of every kind, wheat, barley, oats, and corn. Galicia alone produced six millions of *arrobas* of turnips (the *arroba* is 25lbs. of 16oz.) The other provinces gave forty nine millions *arobas* of wine and six millions of oil. We had a million head of cattle, twelve millions of sheep, me-

rinós included, one hundred and forty thousand horses; two hundred and fourteen thousand mules, and two hundred and thirty six thousand asses. In the vegetable kingdom, twelve hundred thousand *arrobas* of hemp or flax; two thousand six hundred *arrobas* of saffron; four thousand of cotton; more than a million *arrobas* of *Barilla*, which nature offers us spontaneously. The animal kingdom was not less abundant: more than two millions *arrobas* of wool; a million and a half pounds of silk; the mineral kingdom yielded us two hundred and seventy thousand *arrobas* of iron, thirty thousand quintals of coal, and twelve thousand of mineral salt. The products of our industry were valued at fifty-six millions three hundred and twenty-three thousand ninety-seven hard dollars.—Something of all this remains; and this is enough for us.—We are content.

As for our political constitution, it is still the same. The king is the living law; he governs us paternally. Our ministry is neither *one* nor divisible. The ministers are in fact no more than secretaries, for they do, or ought to do, nothing of themselves. It is always the king who prescribes, and regulates. It would be perhaps dangerous for our secretaries of state to act in concert, or to undertake to pursue a system. Thus, the one is entirely alien to the other. The councils are sometimes consulted, particularly that of Castille, which is administrative and judicial at the same time. But after all, the opinions given are only materials for the supreme judgment of the monarch.—Whether M. de Pizarro continues, or M. de San Carlos returns, as the *London Times* will positively have it, is in the main, of perfect indifference; it touches not the question.—The king is ever active; it is he who bears, interrogates, approves, and condemns in the last resort. In this way, brought back after six years of tempest, to our old habits of three centuries of growth, we jog on quietly, and without noise. This course may appear to you very monotonous; you will say that movement is life: be it is so; our movement is very gentle; it is almost sleep. God grant that the march of events may not disturb our repose! M. de Garay promised us a budget each year. He has forgotten his promise and we also.

When the public stocks depreciate four-fifths, without exciting the least sensation, it is idle to attach importance to the matter of this or that individual being placed over the finances. The king promised us also to give us a constitution, when tranquillity should be established, and more auspicious circumstances permitted: his majesty told us that he would adapt his system to the progress of knowledge, and the actual state of civilization!—All the circulars of M. de Cevallos respecting the construction of canals and great roads are in full force, since they have not been repealed by other circulars. There are no enemies without who threaten the peninsula. England is interested in watching over our repose: it is her work; Portugal will be restrained by England, and France by all Europe.

Cease then to look upon us with an eye of curiosity. There is nothing new here; there will be nothing new.—

Your's

T. P. S.

The following Obituary notice of a man who had approached as near to evangelical perfection as it is given to our feeble nature to do, is copied from a Boston Gazette. It is entitled, on account both of the extraordinary merit of its subject, and the particular elegance of the composition, to a place in columns somewhat less perishable than those of a daily paper.

Died, on Saturday last, the 19th inst. the Rev. FRANCIS ANTHONY MATIGNON, D. D. He was born in Paris, Nov. 10, 1753. Devoted to letters and religion from his earliest youth, his progress was rapid and his piety conspicuous. He attracted the notice of the learned faculty as he passed through the several grades of classical and theological studies; and having taken the degree of bachelor of divinity, he was ordained a priest, on Saturday, the 19th of September, 1778, the very day of the month and week, which, forty years after, was to be his last. In the year 1782, he was admitted a licentiate, and received the degree of doctor of divinity from the college of the Sorbonne in 1785. At this time he was appointed regius professor of divinity in the college of Navarre, in which seminary he

performed his duties for several years, although his state of health was not good.

His talents and piety had recommended him to the notice of a prelate in great credit, (the cardinal de Brienne,) who obtained for him the grant of an annuity from the king, Louis XVI. which was sufficient for all his wants, established him in independence, and took away all anxiety for the future. But the ways of Providence are inscrutable to the wisest and best of the children of men. The revolution, which dethroned his beloved monarch, and stained the altar of his God with the blood of holy men, drove Dr. Matignon an exile from his native shores. He fled to England, where he remained several months, and then returned to France to prepare for a voyage to the United States. He landed in Baltimore, and was appointed by bishop Carroll, pastor of the Catholic church in Boston, at which place he arrived, August 20, 1792.

The talents of doctor Matignon were of the highest order. In him were united a sound understanding, a rich and vigorous imagination, and a logical precision of thought. His learning was extensive, critical and profound, and all his productions were deeply cast, symmetrically formed, and beautifully coloured. The fathers of the church and the great divines of every age were his familiar friends.—His divinity was not merely speculative, nor merely practical; it was the blended influence of thought, feeling, and action. He had learned divinity as a scholar, taught it as a professor, felt it as a worshipper, and diffused it as a faithful pastor. His genius and his virtues were understood; for the wise bowed to his superior knowledge, and the humble caught the spirit of his devotions. With the unbelieving and doubtful he reasoned with the mental strength of the apostle Paul; and he charmed back the penitential wanderer with the kindness and affection of John the evangelist. His love for mankind flowed in the purest current, and his piety caught a glow from the intensity of his feeling. Rigid and scrupulous to himself, he was charitable and indulgent to others. To youth, in a particular manner, he was forgiving and fatherly. With him the tear of

penitence washed away the stains of error; for he had gone up to the fountains of human nature, and knew all its weakness. Many retrieved from folly and vice can bear witness how deeply he was skilled in the science of parental government; that science so little understood, and for want of which, so many evils arise. It is a proof of a great mind not to be soured by misfortunes, nor narrowed by any particular pursuit. Dr. Maignon, if possible, grew milder and more indulgent as he advanced in years. The storms of life had broken the heart of the man, but out of its wounds gushed the tide of sympathy and universal christian charity. The woes of life crush the feeble, make more stupid the dull, and more vindictive the proud; but the great mind and contrite soul are expanded with purer benevolence, and warmed with brighter hopes, by suffering—knowing that through tribulation and anguish the diadem of the saint is won.

In manners, doctor Maignon was an accomplished gentleman, possessing that kindness of heart and delicacy of feeling, which made him study the wants and anticipate the wishes of all he knew. He was well acquainted with the politest courtesies of society, for it must not, in accounting for his accomplishments, be forgotten, that he was born and educated in the bosom of refinement; that he was associated with chevaliers, and nobles, and was patronized by cardinals and premiers. In his earlier life, it was not uncommon to see ecclesiastics mingling in society with philosophers and courtiers, and still preserving the most perfect apostolic purity in their lives and conversation. The scrutinizing eye of infidel philosophy was upon them, and these unbelievers would have hailed it as a triumph to have caught them in the slightest deviation from their professions. But no greater proof of the soundness of their faith or the ardour of their piety could be asked, than the fact, that, from all the bishops in France at the commencement of the revolution, amounting to one hundred and thirty eight, but four only were found wanting in integrity and good faith, when they were put to the test; and it was such a test, too, that it could have been supported by religion only. In passing such an ordeal, pride, forti-

tude, philosophy, and even insensibility, would have failed. The whole strength of human nature was shrunk-en and blasted when opposed to the bosom of the revolution. Then the bravest bowed in terror, or fled in affright; but then these disciples of the lowly Jesus, taught mankind how they could suffer for his sake.

Doctor Maignon loved his native country, and always expressed the deepest interests in her fortunes and fate; yet his patriotism never infringed on his philanthropy.—He spoke of England as a great nation, which contained much to admire and imitate, and his gratitude kindled at the remembrance of British munificence and generosity, to the exiled priests of a hostile nation of different religious creeds.

When doctor Maignon came to Boston, new trials awaited him. His predecessors in this place, wanted either talents, character, or perseverance; and nothing of consequence had been done towards gathering and directing a flock. The good people of New-England were something more than suspicious on the subject of his success; they were suspicious of the catholic doctrines.—Their ancestors, from the settlement of the country, had been preaching against the church of Rome, and their descendants, even the most enlightened, felt a strong impression of undefined and undefinable dislike, if not hatred, towards every papal relation. Absurd and foolish legends of the pope and his religion were in common circulation, and the prejudice was too deeply rooted to be suddenly eradicated or even opposed. It required a thorough acquaintance with the world to know precisely how to meet these sentiments of a whole people. Violence and indiscretion would have destroyed all hopes of success. Ignorance would have exposed the cause to sarcasm and contempt; and enthusiasm, too manifest, would have produced reaction, that would have plunged the infant establishment in absolute ruin. Doctor Maignon was exactly fitted to encounter all these difficulties. And he saw them, and knew his task, with the discernment of a shrewd politician. With meekness and humility he disarmed the proud; with prudence, learning, and wisdom, he met the captious and slanderous; and so gentle and so just was

his course, that even the censorious forgot to watch him, and the malicious were too cunning to attack one armed so strong in honesty. For four years he sustained the weight of this charge alone, until Providence sent him a coadjutor in the person of the present excellent bishop Cheverus, who seemed made by nature and fitted by education and grace to sooth his griefs by sympathy, (for he too had suffered,) to cheer him by the blandishments of taste and letters and all congenial pursuits and habits; and in fact, they were as far identified as two embodied minds could be. These holy seers pursued their religious pilgrimage together, blessing and being blessed, for more than twenty years; and the young Elisha had received a double portion of the spirit and worn the mantle of his friend and guide, long before the sons of the prophets heard the cry of *my father, my father, the chariot of Israel and the horsemen thereof*. May the survivor find consolation in the religion he teaches, and long be kept on his journey to bless the cruise of oil in the dwellings of poverty and widowhood, and to cleanse by the power of God, the leprosy of the sinful soul.

Far from the sepulchre of his fathers, repose the ashes of the good and great doctor Matignon; but his grave is not as among strangers, for it was watered by the tears of an affectionate flock, and his memory is cherished by all who value learning, honour, genius, or love devotion.

The writer of this brief notice offers it as a faint and rude memorial only of the virtues of the man, whose character he venerated. Time must assuage the wounds of grief before he, who loved him most, and knew him best, can attempt his epitaph.

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Account of the Measures adopted for settling the Boundaries of the United States.

The treaty of Ghent, which restored peace to Great Britain and the United States, provided an international tribunal for the perfect settlement of this disputed title, and for the actual delineation of the other treaty boundaries of the country.

Three independent boards of commissioners were established by that treaty. To the first was assigned the

duty of ascertaining to whom the several islands in the bay of Passamaquoddy, and Grand Menan in the bay of Fundy, belonged by virtue of the treaty of 1783. This board consisted of two commissioners, one appointed by each of the contracting parties. No umpire, as in the former case, was to be called to their assistance. If the commissioners so appointed agreed in opinion, their decision was to be binding and conclusive on both nations. If they disagreed in part or in whole, separate reports were to be made to the two governments, and 'some friendly sovereign or state to be then named for that purpose,' was to determine the controversy.

In pursuance of the provisions of the treaty in this respect, his Britannic majesty appointed his former commissioner, the honourable Thomas Barclay, to be a commissioner under this article, and the president of the United States, by and with the advice and consent of the senate, appointed the honourable John Holmes, of Alfred, in the district of Maine, and then a member of the senate of Massachusetts.

The claims of the British government were confided to the management of the honourable Ward Chipman, judge of the supreme court of New Brunswick, and those of the United States to James Trecothick Austin, esquire, a counsellor at the bar of Massachusetts.

The commission was opened at St. Andrew's, on the 24th of September, 1816, immediately after colonel Barclay's appointment was communicated to the American government. Each of the agents claimed, for their respective governments, all the islands in dispute.

The claim of the British nation was founded on the assertion, that at the peace of 1783 these islands were an integrant part of the province of Nova Scotia, and, as such, specially excepted from the limits assigned to the United States.

The Nova Scotia intended in the treaty of 1783 was said to be that province erected and described in certain letters patent, granted by king James I., in 1621, to sir William Alexander, master of requests for the crown of Scotland; which charter, it was contended, actually included all the islands in question.

The American agent denied that

any title could be deduced from the letters patent above mentioned, which, he contended, were void *ab origine*, and had been obsolete, derelict, and neglected by all nations, but especially by the predecessors of his present Britannic majesty—that, in point of fact, the letters patent did not include any of the islands—that a remarkable exception was to be found in the description of territory therein set forth, plainly proving an intention not to assign them to Alexander, and that, in fact, from the date of the grand charter of Plymouth, they were a constituent part of the territories now forming the commonwealth of Massachusetts, and had been acknowledged as such by Great Britain on numerous occasions, in grants, charters, cessions, public letters and treaties.

The extensive field thus opened for examination was diligently explored by both the agents, in a very copious analysis and discussion of every public act, and most of the charter transactions, which had the eastern territory for their object; and occupied the attention of the commissioners until the 24th day of November, 1817, on which day the board agreed in a decision on all the questions before them. This decision has terminated all the disputes heretofore existing on the subject. The opinion and judgment of the commissioners has been communicated to the respective governments of Great Britain and the United States, and has ascertained and determined that Moose, Dudley and Frederick islands do belong to the United States, and that all the other islands in the bay of Passamaquoddy, and Grand Menan in the bay of Fundy, do belong to Great Britain, by virtue of the treaty of peace of 1783.

By those negotiations a permanent right of navigation was secured to the citizens of the United States through the eastern or ship channel, between Deer island and Campo Bello. To do the same in this case was beyond the authority of the present commissioners, whose duty was limited to ascertaining the right to the islands, and did not extend to the decision of any question of water privilege; which must be governed by principles of national law applicable to the case. The eastern

passage is at times the only one, and always is the best passage-way for ships through the bay of Passamaquoddy and into the river St. Croix. Its free navigation, essential to the enjoyment of the use of the river, has always been claimed by the United States. Their ministers have been instructed to provide for their interests in this passage way; and it has been of as much or more importance than the possession of Grand Menan. Since the capture and occupation of Moose island, an English sloop of war has occasionally been stationed there, and American vessels prohibited from passing.

The reason why an exclusive right was assumed by the British government was assigned to be, that this was a passage between two islands, both of which belonged to Great Britain, and therefore was exclusively hers. That it was not the only, although it was the best, passage, and there being another, which was practicable, no inconvenience attending it could give the Americans a right of using this. If the water between Deer island and Campo Bello had been in fact a river, the opposite shores of which belonged to Great Britain, there could be no doubt that her principle was correct, it being an undoubted doctrine of national law, that a river in the territories of a nation, is as much its exclusive property as the land, and it is only a river of boundary, where two nations possess respectively one of the banks, that gives to both a common right of navigation.

But the passage way between Campo Bello and Deer island is not in a river, but in a bay; and it may well be doubted whether the law applicable to the former, can with any propriety be applied to the latter. Not only is this passage-way in a bay, but it is in the grand bay of Fundy, described by the early navigators, and now very commonly known to be 'more properly a part of the sea or ocean.'

It had, indeed, heretofore been considered, that these islands and the passage-way between them were in the bay of Passamaquoddy, which being an interior and smaller bay, distant from the ocean, and connected with the coasts of the continent, had all the

jurisdictional properties of a river; and that a free navigation of it might be attended with evils similar to those which would follow from an admission of foreign vessels as a matter of right, into the rivers of a country.

But the treaty of Ghent has contradicted this supposed geographical fact. It has in express words declared, that the bay of Passamaquoddy is part of the bay of Fundy; and no reason can be assigned for this assumption and declaration, but that it was intended to make the waters, formerly called Passamaquoddy, as free and common, as those of any other part of the bay of Fundy.

Now the passage-way between New Brunswick and Grand Menan in the bay of Fundy, has never been claimed by Great Britain as exclusively hers, because she possessed in full sovereignty the opposite coasts; neither can she claim the passage-way between Deer island and Campo Bello, lying in the same bay. So long as the treaty of Ghent is in force, all the islands and the passage-ways between them heretofore in dispute are in 'the grand bay of Fundy, or more properly a part of the sea or ocean,' and no exclusive right of navigating those waters can be claimed by any particular nation.

On this ground we presume, notwithstanding the decision of the commissioners, assigning Campo Bello and Deer Island to Great Britain,—the vessels of the United States will have a perfect right to navigate by the eastern or ship channel as freely as on any other part of the ocean.

To put the question however beyond dispute, as far as was practicable, the commissioners addressed a joint letter to the two governments of Great Britain and the United States, in which they declared that their decision was founded on the presumption of an existing right in each of the two nations freely to navigate by this channel, notwithstanding the sovereignty of Great Britain over the islands lying contiguous and on each side had been expressly allowed.

The English forces still hold a military possession of Moose Island and its dependencies; but it is understood that arrangements are in train for their removal, and that early in the ensuing spring, the place will be restored to the

jurisdiction of the United States, and be once again under the local authorities of Massachusetts.

Thus has happily terminated a second tribunal, instituted by two great and independent nations, for the settlement of important interests in dispute between them, interests far greater than many which history has recorded as the foundation of long protracted and destructive wars. An example is thus given to the world, which it is hoped may be powerful enough to supersede that rash resort to arms, which has too often wasted, in the progress of desolation, more than all the objects of the contest were worth.

The other commissioners, provided in the treaty of Ghent, are not so much to settle disputes as to prevent them.

The lines of territory recited in the treaty of peace of 1783, were never actually drawn upon the land, but were described from the best maps then existing, but now known to be very inaccurate. To explore the frontiers together, and to fix monuments of boundary by common consent, had become a very necessary duty, in order to prevent conflicting grants and unintentional trespasses. Accordingly, this duty was divided into two parts. The commission established by the fifth article of the treaty of Ghent was to run the boundary line due north from the source of the river St. Croix to the north-west angle of Nova Scotia, thence along the highlands which divide those rivers, that empty themselves into the river St. Lawrence, from those which fall into the Atlantic ocean, to the north-westernmost head of Connecticut river, thence down along the middle of that river to the 45° of north latitude, thence by a line due west on said latitude until it strikes the river Iroquois or Cataraqua—to make a map of said boundary—declare it under their seals to be a true map, and to particularize the latitude and longitude of the northwest angle of Nova Scotia, of the north-westernmost head of Connecticut river, and of such other points of the said boundary as they may deem proper.

Under this article the British government appointed the same commissioner as in the former; and appointed the same agent jointly with his son, Ward Chipman, jun. esq. a counsellor at law in New Brunswick. The American government

appointed Cornelius P. Van Ness, Esq. of Vermont, commissioner, and William C. Bradly, late member of congress from the same state, as their agent. This board met at St. Andrew's on the 24th of September, 1816, but the season being then too far advanced to commence the survey, they adjourned to the first of June. At this time the necessary parties were arranged, the instructions given to them, and the summer was occupied by these parties, and the result of their proceedings will be submitted to the commissioners in May next in the city of New York.

The extent of the duty assigned to this board will necessarily consume much time before the objects of their appointment can be attained. A common opinion has prevailed, relative to this line from the head of the St. Croix to the highlands, which has not hitherto given rise to any practical evil, and has generally been represented the same in the modern maps, published both in England and America. Since this subject has been before the commissioners, two maps have been published, which trace a line of boundary essentially different from what has been supposed before to be correct: we allude to colonel Bouchette's map of Canada, and Purdy's map of Cabotia; both of them elegantly executed, and apparently not without the approbation of high authority. The lines, drawn on these maps, curtail the limits of Massachusetts on the eastern frontier, and place the whole of the river St. John's within the British dominion.

It is not understood, that any claim has been made by the English agent in correspondence with the new lines thus described: in fact, the official surveys have not been sufficiently advanced to permit any claim of any kind. What the English possessions may eventually be, will rest on the report of the surveyors; and the point assumed by the commissioners as the dividing line on the highlands.

The eastern boundary-line of the United States has always been drawn due north from the source of the St. Croix, crossing the St. John's at about 47° north latitude; and thence running in the same direction about forty-six miles, until it met the highlands supposed to be intended by the treaty.

There are many inconveniences in

this course. For a considerable part of the line the river St. John's is just on the border, but not within the limits, of the United States; and its waters will of course remain closed to her navigation, —if ever a settlement in that part of the district of Maine should render the use of them desirable.

The communication also between New Brunswick and Quebec is obstructed; and the passage of the English mail is over part of the territories of the United States.

This inconvenience was so great, that, at the first negotiation at Ghent, the English commissioners proposed a revision of the boundary line, so as to secure to Great Britain the desired communication; and intimated that it must be done by a cession to Great Britain of that part of the district of Maine, which intervenes between New Brunswick and Quebec, and prevents a direct communication. The inadmissibility of that proposition at the time, and under the circumstances in which it was urged, is apparent; but in the tranquillity of peace, it is not unlikely that a change of boundary might be made essentially beneficial to both parties.

Thus, if the boundary line, instead of being drawn due north to the highlands, was made to meet the St. John's at the highest point above the actual English settlements; and the river, instead of an arbitrary line, become the division between the two countries to the 47° north latitude, the United States would gain an addition of territory, important in position, though not of any considerable magnitude; while the English possessions on the left bank would still have access to the water, and lose no material advantage. In exchange for this, the new boundary on the north might be drawn from some point in the river, by a straight line, to the province of Lower Canada; and thus a direct communication between her two provinces be opened to Great Britain, without any inconvenience to the United States.

The detail of such a plan would require accuracy and attention. The general principles only are stated above, on which such a negotiation might be pursued.

But, as the territory in this vicinity is of importance to Great Britain, as the means of opening a free communication

between her provinces, another object could be mentioned, for which it may possibly be considered as an equivalent in exchange.

The right of fishing within the marine league on the coast of Nova Scotia, it is maintained by Great Britain, was lost to the United States, when by the late war the treaty of 1783 was annulled.—If so, this territory, or a right of way over it, may present the means of obtaining the renewal of the privilege; and the consent of Massachusetts would probably not be withheld for an equivalent in which her enterprising citizens have so deep an interest.

Some preparations are making, which indicate an attempt by Great Britain to obtain more than would be necessary for the above purposes, under the 5th article of the treaty of Ghent; and Col. Bouchette, in his History of Canada, lately published, has stated his reasons in full for the expectations of annexing the territory in question to New Brunswick, by virtue of the treaty of 1783. But little confidence can be placed on these opinions; at least several years must elapse before the questions under that article can possibly be settled.

The remaining board of commissioners established by the treaty of Ghent, were directed to run the boundary-line from the point where the 45° north latitude strikes the Iroquois or Cataraqua, to lake Superiour, as it was declared by the treaty of peace of 1783, and to decide to whom the islands in the lakes and rivers, through which the line passes, do severally belong.

General Peter B. Porter was appointed commissioner, and Samuel Hawkins, Esq. agent, for the United States; and John Ogilvie, Esq. commissioner on the part of Great Britain. They met at St. Regis, and established by accurate astronomical observation the point of the 45° north latitude, and afterwards, by careful admeasurement and surveys, described the boundary towards the lake Ontario. It is understood that no material alteration has been made in the line heretofore considered as the true boundary. The latitude line described in the treaty of 1783, to be run from the Connecticut river to the St. Lawrence, is to be protracted by the commissioners under the fourth article; who have not yet commenced that duty. This

line was supposed to have been settled soon after the peace, and divides the actual settlements of the two countries. It was formerly run with great attention and care, but, as is recently said, without the aid of good instruments; and that, of course, it is incorrect,—being a waving, and not a straight, line. If there be an error, it will now be corrected. Nor ought any party, who may, on the final admeasurement of it, lose any part of its present possessions, to be in the least dissatisfied. The true boundary is described in the treaty of peace. The location of that boundary is a work of science, diligence, and labour; and the governments of both countries will be careful that a common mistake and public misapprehension shall not produce individual injury.

UNIVERSITY OF EDINBURGH.

On the System of Education pursued at that University.—Literary Classes.

The sessions of Edinburgh University, like the others in Scotland, commence in October, and terminate in April; during which time every class meets at least once a-day.

At the first Latin class, which meets twice a-day, select portions of Cicero—as his Orations, two or three books of Livy, and one or two books of Virgil's *Æneid*, are read. Translations from English into Latin are made in the class once or twice in the course of the week. The passages, which the present professor selects for that purpose, are from the works of Blair, Johnson, Addison, and Hume.

The books chiefly read in the second or advanced Latin class are of Cicero's philosophical works, his treatises, *De Officiis* and *De Finibus*; selections from his *Quæstiones Tusculanæ de Natura Deorum*; and of his rhetorical works, his *De Oratore*: of Virgil, two books of the *Georgics*; and of Tacitus, his treatise *De Moribus Germanorum*, or *De Vita Agricolæ*.

The first Greek class, which assembles twice in the day, commences with the Grammar (Moor's); and, during the session, reads a few chapters of the New Testament, a portion of the *Collectanea Minora* mentioned above, and a book of Homer.

At the second or advanced Greek class, Neilson's or Dunbar's Exercises,

and part of the *Analecta Majora*,—a work precisely the same in arrangement as the *Minora*, and by the same author, but with more difficult examples,—form the books of study. At the third or highest Greek class, extracts from the second volume of the *Analecta* are read.

At the end of the session, in the advanced Greek and Latin classes, there are subjects in Latin and English for essays, and in Greek and Latin for odes, epigrams, &c. given out by the professor for competition; and, to the successful competitors, prizes (which consist of small sums of money, books; &c.) are awarded.

In these classes, at their meetings, five or six students, at most, are examined on the exercise delivered on the preceding day; and this arrangement is observed until the whole of the class has been examined.

In these advanced classes, once in the week, lectures are delivered by the professor of Latin on Roman antiquities, synonymous words, &c.—and by the professor of Greek on the History and Literature of the Grecians.

The punishments inflicted at the literary classes are, fines of five, ten, and twenty shillings, expulsion from the University, &c.

The number of students that annually attends each Latin and Greek class, varies from one to two hundred.

The fees paid by the student on his admission to each of these classes, is three pound eight shillings, including all expenses; and, it may here be observed, that, after an attendance of two years at any class, the ticket becomes perpetual.

Previous to a student's admission to any of the classes, he must provide himself with a matriculation-ticket, for which he pays ten shillings, and the fund accumulated from such a source, which, from the two thousand students that annually attend the University, amounts to a thousand pounds a-year, is allotted towards defraying the expenses of the library.

At the commencement and termination of the sessions, these classes, like all others of the University, are opened and closed by an introductory and valedictory lecture. The plan of study, the authors to be perused, and the advantages of the subject, form the chief topics

of the introductory lectures; and, in the valedictories, the professor takes the opportunity of commenting on the various states of proficiency which the students have displayed during the season, of congratulating those on their success who have made creditable improvements, of rousing the indolent to a sense of their duty, and of placing before the eyes of all the splendid prospects of fame and immortality as incentives to vigorous application.

Mathematical Classes.—At the first mathematical class, the student is initiated in the principles of geometry, of algebra, and of plane trigonometry.

At the second class, the student resumes the subject at the place where on the second year he had left off; which, in algebra, is generally at quadratic equations; in geometry, at some of the books of Euclid succeeding to the sixth; to these he adds spherical trigonometry and conic-sections.

In the third mathematical class, the doctrine of loci, the theory of fluxions, the principles of fortification, gunnery, &c. form the subjects of the student's attention.

The rewards, punishments, and fees, are the same nearly as at the literary classes.

Logic Class.—At the commencement of this course, the professor, in the form of lectures, delivers a dissertation on the several systems of philosophy that have existed from the time of Pythagoras until the present day, with copious criticisms on the excellencies and errors of each. He then gives an abstract of human physiology. From that, he passes to what may strictly be called logic. To the student, subjects chiefly of a metaphysical nature are given once in the month for essays; and, at the end of the session, exercises of the same kind are delivered for competition, in which the successful competitors, to the number of three or four, are each rewarded with two or three guineas.

Metaphysical Class, or Class of Moral Philosophy.—The course of lectures delivered in this class, embraces that view of the subject which the learning of its professor can accumulate, or his genius suggest.

Natural Philosophy Class.—The various applications of the mixed mathematics in dynamics, hydraulics, hydro-

statics, optics, astronomy, &c. form the subjects of the lectures delivered at this class.

The fees for attending the four last classes, are the same as in the literary.

Medical Classes.—In the medical division, which comprehends the classes of anatomy, chemistry, practice of physic, botany, clinical surgery, midwifery, the same arrangement in treating these subjects is observed which is common to most of the medical lectures in the different parts of the kingdom. The terms of attendance on each of these classes amount to four pound nine shillings, being one guinea more than what is paid at the literary and philosophical.

Law Classes.—There are three classes in which lectures are delivered on the subject of law: that of the Scotch law, that on civil law, and that on the law of nature and nations.

Almost all the students who intend to practise the law, either as advocates or attorneys, attend the first of these: the second is attended only by those who are designed for the bar; and the last, the class of the law of nature and nations, is rather an honourable sinecure for a deserving gentleman, than a laborious and useful situation.

The fees for attending the law classes are the same as those of the Medical.

Divinity, or Theological, Classes.—The division of study that remains to be mentioned is the theological; and it comprehends the classes of divinity, ecclesiastical history, and oriental languages.

Every student must attend the first of these at least five years before he can take orders or obtain a license to preach. Previous to his admission into this class, however, he must produce certificates of his having completed his literary and philosophical studies.

In this class, or hall as it is named, the student reads or delivers one or two discourses annually, and on subjects, for the first year, of the professor's, and latterly of his own selection. Of these discourses, one must be in Latin.

The student in divinity, along with this class, having attended that of ecclesiastical history, and that of oriental languages, each for one year, applies to the nearest presbytery for a license.

On a day appointed by this body, and on a text of Scripture of their choosing,

the student delivers a sermon or lecture: after which, he is examined as to his knowledge in philosophy, and his proficiency in the learned languages; and, if it then appear to his examiners that his acquirements are such as qualify him for the office he is about to undertake, he is presented with a warrant to preach.

The fees for attending these classes are but small; and, in consideration of this, the professor of divinity has a salary, which exceeds that of the other professors at least by a third: it amounts to 160*l* a year.

DEGREES OBTAINED AT THE UNIVERSITY OF EDINBURGH.

Master of Arts.—At this, as at the other Scotch Universities, there is no degree preceding that of Master of Arts; and this academical honor is not, as at some universities, to be claimed by the candidate's proving that his name has been so many terms or sessions upon record. It is certainly a necessary qualification for obtaining it, that the student has attended a philosophical course, and that he can produce, from his several professors, certificates as to his behaviour and proficiency. But, besides this, he must, if he be required, compose a thesis on some question in science or in literature, in Latin, and defend it in presence of the professors. If that body are pleased with the candidate's ability, he is presented with a diploma. The most of this form, however, is generally dispensed with, especially if the talents and acquirements of the candidate are known. And to this it may be added, that, at this university, a student can never obtain any academical honour before he has completed his twenty-first year.

Doctor in Divinity and in Civil Law.—The degrees of Doctor in Divinity and in Civil Law are likewise unattainable by any period of attendance at the university. They are conferred by the Senatus Academicus, out of respect to their talents, on some popular preacher, or on some eminent literary character.

Doctor in Medicine.—The installation into the degree of a Doctor in Medicine is conducted with some ceremony. After a residence at the university for three years, and an attendance on all the medical and surgical classes, the candidate for medical hon-

ours must compose a thesis, in Latin, on some professional subject; and besides defending it at whatever length his examiners please, in that language, he must undergo three examinations on his general knowledge of medical science. If he is successful in these trials, the candidate, on the second of August, is presented with a diploma.

Were the purposes of this course of study and examination answered by corresponding diligence and proficiency on the part of the student, then might the medical degree equal in respectability any other, and the University of Edinburgh deserve that high celebrity for medical science which it generally obtains. But it is a fact, and one most lamentable to be recorded, that the advantage and honour which might accrue from such preparation is generally obviated either by the ignorance or indolence of the young man intended for that profession. Many of my readers may be inclined to doubt my veracity when I make the following assertion, that, out of the eighty who graduate at one period, there are not twenty who have converted their thesis into Latin, or sixty who have composed their thesis at all.

The cause of this opprobrium is easily to be explained. At Edinburgh, there is a body of men, generally sons of Esculapius, who neither have connexion nor capital to obtain medical practice, and who find that, preparing young men for their examinations is the only way by which they can put their medical or classical knowledge to profit. To these every medical student applies, and, for a certain sum, obtains either a translation of his thesis, or a thesis *ex toto*; and is instructed, previous to his examination, nearly in the precise questions he will be asked.

The class, fees, and college expenses, attending on medical graduation, amount to about sixty guineas.

Of the learned professions in Scotland, the law is the most expensive, and leads to the greatest honours.

Previous to his being called to the bar, the advocate, besides the classes that relate immediately to his profession, must have attended a philosophical course, and must compose a Latin dissertation on some point of law, and de-

send it in the same language before a committee of the Faculty of Advocates.

The expenses attending the education of an advocate for class fees, &c. amount nearly to 150*l*, of which 100*l*. is paid on his entering the faculty.

— LYTHOGRAPHY.

Observations on a series of Lithographical drawings, presented to the Academy of Fine Arts; by M. Englemann, of Muhlhausen, on the Upper Rhine.

The effects produced by a tracing or drawing on the stone with a greasy or resinous substance, are the simple results of affinities of which there are three causes:—

1. The facility with which this compact calcareous stone imbibes moisture, without its retaining it in too great a degree.

2. The penetrating power or rather the strong adherence of greasy or resinous bodies to these stones.

3. The affinity of resins and grease for all bodies of the same nature, and the antipathy of these substances to water, and all moist bodies.

From these three principles arise the same number of consequences:—

First, a stroke made with a pencil or greasy ink on the stone will adhere so strongly thereto, as to require some mechanical means to remove it.

Second, all parts of the stone, that are not covered by a coat of grease, will receive, absorb, and retain water.

Third, if a layer of colored greasy substance be passed over the stone thus prepared, it will only adhere to those lines formed by the greasy ink, whilst it will be rejected by those parts that are moistened with water only.

In a word, the lithographical process depends on these two points, that the stone saturated with water should resist the ink, and that this same stone, oiled or greased, should resist the water and take up the ink; thus, by applying and pressing a sheet of paper on the stone, the greasy and resinous coloured lines will alone be transmitted on the paper, showing a counter-proof impression of that which is drawn on the stone. For this purpose the stone must first be rendered capable of imbibing water, and at the same time of receiving with facility all greasy or resinous bodies.

The former object can be effected by an acid which will corrode the stone, and take off its fine polish, and make it capable of receiving the water.

Any greasy substance is capable of giving impression upon stone, whether the lines be made with a pencil or with greasy ink; or otherwise the ground of a drawing may be covered with a black greasy mixture, leaving the lines in white.

Hence result two distinct processes:—The engraving by tracing, produced by the line of the pencil or brush dipped in the greasy ink; and the engraving by dots or lines, as is done on wood or copper.

It is easy to get impressions of prints without any reversing, by transposing on the stone a drawing traced on paper with the prepared ink.

From these observations we shall conclude that certain lithographical processes differ entirely from those of engravings; and, as they partly depend on a play of affinities and repulsions, produced by substances of different natures, it is possible by varying them we may at length succeed in producing very unexpected effects.

Lithographic Process, or Method of Printing with Stone, invented in Germany.—All kinds of close calcareous stone of an even and fine grain, which are capable of taking a good polish with pumice-stone, and having the quality of absorbing water, may be used for lithography.

These stones are found in many departments of France, and amongst beds of calcareous stones, in the mountains which separate Ruffee from Argoulemè: these are very proper for this kind of work.

Ink.—To compose the ink, heat a glazed earthen vessel over the fire: when it is hot, introduce one part by weight of white Marseilles soap, and as much mastic in grains; melt these ingredients and mix them carefully; then incorporate five parts by weight of shell lac, and continue to stir it: to mix the whole, drop in by degrees a solution of one part of caustic alkali in five times its bulk of water. Make this addition with caution; because, if the ley is added all at once, the liquor would froth up and run over the edges of the vessel.

When the mixture of these substances

is accomplished by a moderate heat and frequent stirring, a necessary quantity of lamp-black is to be added; and immediately after put in a sufficient quantity of water to make the ink liquid and proper for writing.

Drawing.—This ink is used to draw on the stone in the same manner as on paper, either with a pen or pencil; when the drawing on the stone is quite dry, and an impression is desired, the surface of the stone is wetted with a solution of nitric acid, in the proportion of fifty to one of water; this must be done with a soft sponge, taking care not to make a friction on the drawing.

The wetting must be repeated as soon as the stone appears dry; it makes an effervescence, and when that ceases the stone is to be carefully and gently rinsed with clean water.

Printing.—While the stone is still moist, it should be passed over with the printer's ball charged with ink, which will only adhere to those parts which are not wetted. A sheet of paper properly prepared for printing is then spread on the stone, and the whole submitted to the press, or passed through a roller.

To preserve the drawing on the stone from dust, if not in immediate use, a solution of gum arabic is passed over it, which can be removed by a little water when the stone is wanted again.

Instead of ink, they sometimes make use of chalk crayons for drawing upon the stone or upon paper, from which a counter-proof is taken upon the stone. The crayons are made in the following manner:—

Three parts of soap, two parts of tallow, and one part of wax, are all dissolved together in an earthen vessel. When all is well mixed, a sufficient portion of lamp-black, called Frankfort black, will give it an intense colour; the mixture is poured into moulds, where it must remain till quite cold; when it will become consistent, and proper to be used as chalk pencils.

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Remarks on the tails of Comets.—A series of papers by M. Flaugergues, has been lately published in the *Journal de Physique*, on the tails of comets, in which he examines in detail the various hypotheses that have been proposed to account for them, but conceives them

all to be inadequate. After taking a short review of the opinions entertained on this subject by the ancients, and the earlier of the moderns, he examines more particularly those of Kepler and Descartes, and finally comes to that of Newton. This great philosopher conjectured that the tails of comets were composed of an extremely rare vapour, which proceeded from their nucleus, generated by the great heat which these bodies acquire when they approach the sun. He formed a calculation of the degree of heat which the comet of 1680 would experience in its perihelion; and he estimated it at a temperature 2000 times greater than the heat of red-hot iron.

To this hypothesis M. Flaugergues objects, that on account of the rapidity of the motion of comets, it is very doubtful whether they can acquire a degree of heat nearly equal to that assigned to them by Newton. Besides, it is remarked that the tails of comets are by no means in proportion to their proximity to the sun; some comets which have approached very near the sun having had very little of this appearance, while others have had large tails, although they never came very near the sun in any part of their course. Another objection against the hypothesis is, that the centrifugal force which is produced by the motion of the comet in a curve round the sun, being common to the comet and to the vapour which is supposed to form the tail, cannot tend in any degree to detach the comet and the vapour from each other. It is further urged that the greatest part of the matter which composes the tail of a comet ought, after it has passed its perihelion, to follow after the comet in the direction of its motion, and not precede it, as is always the case. Again, the matter which forms the tail of a comet, being surrounded with matter which is more dense, and which, consequently, ought to reflect light more strongly, the tail ought not to be distinguished by its brilliancy from the other parts of space. As, according to the hypothesis of Newton, the vapour which forms the tail of a comet is elevated from the nucleus because it has less specific gravity than the medium with which it is surrounded, the lateral motion of the tail should be entirely destroyed by the resistance of this me-

dium; the matter of the tail, not being able to follow the comet, would be always left behind, and we should not see the tail after the perihelion precede the comet, as is always the case.

RIO DI JANEIRO.

From Morier's Second Work on Persia.

We passed a fortnight at Rio di Janeiro, in the various employments of public visits and public dinners; and in the examination of the more curious objects in the town and its environs. The place is large and well built for a colonial town, possessing several handsome churches and large monasteries. It ought, therefore, to afford a much better residence to the prince regent than the mean palace which he at present inhabits. It is not fortified, but has several detached works to protect its harbour; the most considerable of which is the castle of Santa Cruz, at the entrance, and a smaller castle on an island nearer the anchorage abreast of the town. Over the town on an eminence, is a fortification called the citadel; and another on the Isola das Cabros: however, nothing appeared sufficiently formidable to save the town from the dangers of a bombardment from the sea. A great quantity of fruit is produced in the gardens around the city, and much is also brought from the villages. Its oranges are highly esteemed; some of which, containing within them an incipient orange, were sent as a present from the prince regent to the ambassadors. They have all the tropical fruits here: but the mango and the pine-apple are said to be inferior to those of the East-Indies. Meat and poultry are dear; and we had great difficulty in recruiting our sea stock of the latter. Black pigs were to be seen in great abundance; and we observed a race of disgusting looking dogs,—without hair, with a black skin, long body, long muzzle, short and crooked legs, and a long curling tail,—ranging about through all the filth of the streets, and apparently without masters.

Indeed, after England, we found the filth of St. Sebastian, and its inhabitants, quite disgusting. Even the Persians could exult; for, with great truth, they said that their towns were clean to what they saw here. It must, however, be allowed, that this is greatly owing to the negro community, who are

so much more numerous than the other classes; and who in certain emergencies, have scarcely a restriction beyond that of the brute creation. Of this we could too well judge, because the Campo di Lampedosa, the large square that was situated before our house, was so constantly infested by them, at all hours of the day, that guards were placed to keep them at a distance.

During the time we were at the Brazils the slave trade was in its full vigour; and a visit to the slave market impressed us more with the iniquity of this traffic, than any thing that could be said or written on the subject. On each side of the street where the market was held, were large rooms, in which the negroes were kept; and during the day, they were seen in melancholy groups, waiting to be delivered from the hands of the trader, whose dreadful economy might be traced in their persons, which, at that time, were little better than skeletons. If such were their state on shore, with the advantages of air and space, what must have been their condition on board the ship that brought them hither? It is not unfrequent that slaves escape to the woods; where they are almost as frequently retaken. When this is the case, they have an iron collar put about their necks, with a long hooked arm extending from it, to impede their progress through the woods, in case they should abscond a second time. Yet amidst all this misery, it was pleasing to observe the many negroes who frequented the churches; and to see them, in form and profession at least, making a part of a christian congregation.

We saw few of the aborigines, for they shun, rather than court, their rulers. Those we saw were of a low stature, of a coppery red colour, with jet-black hair, high cheek-bones, turned-up noses, and broad unexpressive faces. The queen of a tribe, said to be cannibals that bordered on the Portuguese possessions, was shown to us: her countenance was terrific. She was a prisoner, and attempts were made to humanize her; but hitherto, we were assured, without much success. The proportion of blacks to pure European whites, at St. Sebastian, is as nine to one: they have, however, so intermarried, that there are complexions to be

found of all tints, from downright black to dirty white brown.

NOISES OF A PERSIAN CITY.

The noises that issued from the adjoining houses were quite characteristic of Persian domestic life. In my immediate vicinity lived an old morose Persian, who daily quarrelled with his women; and I could distinguish the voice of one particular female, whose answers made in a taunting and querulous tone, did not fail to throw him into passions so violent, that they generally terminated in blows, the noise of which, accompanied by corresponding lamentation, I could distinctly hear.

Then, bordering on the garden wall, scarce twenty yards from where I usually sat, was a society of women, five or six in number, the wives and slaves of a mussulman, who were either dissolved in tears, sobbing aloud like children, or entranced in the most indecent and outrageous merriment. Sometimes they sang in the loudest tone, accompanied by a tambourine; and then they quarrelled amongst themselves, using every now and then expressions of no ordinary indelicacy. Accident once gave me a view into their yard, where I saw three women surrounded by children, seated on the bare stones, smoking the *kaleoon*. They wore a large black silk handkerchief round their heads, a shift which descended as low as the middle, a pair of loose trowsers, and green high-heeled slippers; and this, I believe, may be considered as a sketch of every Persian woman's dress within the harem, in hot weather.

But there are noises peculiar to every city and country; and none are more distinct and characteristic than those in Persia. First at the dawn of day, the *muezzins* are heard in a great variety of tones, calling the people to prayers from the tops of the mosques; these are mixed with the sounds of cow-horns, blown by the keepers of the *hummums*, to inform the women, who bathe before the men, that the baths are heated, and ready for their reception. The cow-horns set all the dogs in the city howling in a frightful manner. The asses of the town generally beginning to bray about the same time, are answered by all the asses in the neighbourhood; a thousand cocks then intrude their shrill

voices, which, with the other subsidiary noises of persons calling to each other, knocking at doors, cries of children, complete a din very unusual to the ears of an European. In the summer season, as the operations of domestic life are mostly performed in the open air, every noise is heard. At night, all sleep on the tops of their houses, their beds being spread upon their terraces, without any other covering over their heads than the vault of heaven. The poor seldom have a screen to keep them from the gaze of passengers; and as we generally rode out on horse-back at a very early hour, we perceived, on the tops of the houses, people either still in bed, or just getting up, and certainly no sight was ever stranger. The women appeared to be always up the first, whilst the men were frequently seen lounging in bed long after the sun was risen. This universal custom of sleeping on the house-top, speaks much in favour of the climate of Persia; and indeed we found that our repose in the open air was much more refreshing than in the confinement of a room.

— *Morier.*

MOUNT ARARAT.

As we crossed the plain from Abbasabad to Nakhjuwan, we had a most splendid view of mount Ararat. Nothing can be more beautiful than its shape,—more awful than its height. All the surrounding mountains sink into insignificance when compared to it. It is perfect in all its parts, no hard rugged feature, no unnatural prominences, every thing is in harmony, and all combines to render it one of the sublimest objects in nature. Spreading originally from an immense base, the slope towards its summit is easy and gradual, until it reaches the region of snows, when it becomes more abrupt. As a foil to this stupendous work, a smaller hill rises from the same base near the original mass, similar to it in shape and proportions, and in any other situation, entitled of itself to rank amongst the high mountains. No one since the flood seems to have been on its summit, for the rapid ascent of its snowy top would appear to render such an attempt impossible. Of this we may be certain, that no man in modern times has ascended it, for when such an adventurous and persevering traveller as Tournefort failed, it is not

likely that any of the timid, superstitious inhabitants of these countries should have succeeded. We were informed that people have reached the top of the small Ararat (or as it is called here, *Cuchuck Agri dagh*); but as all the account which they brought back was a tale (like that told of Savalan), about a frozen man and a cold fountain, we must be permitted to disbelieve every report on the subject which we have hitherto heard from the natives.

— *Id.*

ENTRY OF THE KING INTO TEHERAN.

As in ancient times, almost the whole of the male population of the city was ordered to meet the king, and very early in the morning of the day of the entry, the environs on the road to Khorassan were covered with people. We were summoned by the prime minister in person, who was so anxious that we should be at our post at the earliest moment, that he came almost unattended to us; and having marshalled our procession, he led the way, and served us as a guide through the streets and bazars. The activity and vivacity of this old man are as amiable as they are extraordinary at his advanced age. We went in our smartest uniforms, and on our most lively horses; the body guard in their handsome Indian dresses, created a great clang; and, together with the numerous servants and attendants attached to the mission, we added greatly to the general bustle. The old vizier at our head, apparently all the time in great trepidation lest he should be too late, put out his horse at the full trot, and at this rate we dashed through the great crowd of horse and foot passengers who had already thronged the road. When we had travelled about two miles from the town, we were placed at our post by some of the officers of Hossein Ali Mirza, one of the princes, governor of Teheran, when we dismounted, smoked, and seated ourselves on the ground, until his majesty should appear. In the mean time, the track of his route was distinguishable over the mountains and along the plain, by a long line of dust, created by his procession. His baggage and equipages were continually passing, until we heard the *Zumburek* or camel-artillery, that at intervals fired volleys in advance. As they approached, the order of procession became more distinct.

His more immediate arrival was marked by the drums and trumpets of his Nokara, the performers of which were mounted on gaudy-dressed camels; then a long row of shatirs, then the king, totally insulated, a speck in the plain; behind him the princes his sons, with their suites, then the courtiers and the officers of *Defter Khoneh*, (as we might say, the chief of the public officers,) and the whole was filled up by an immense *tip*, or body of cavalry. As the king drew near, Mirza Sheffea marshalled us about 100 yards from the road-side, and when his majesty beckoned to us, we went forwards in hasty strides, which the old vizier was anxious we should increase into a trot, it being the etiquette on these occasions, as we afterwards learnt, to run: our conductor himself was running as fast as he could. The king, having given us his *Khosh Amedee*, ordered us to mount our horses, and then requested me to ride near him; whilst Mirza Sheffea dropt in the rear of the king about twenty paces, where was also Hossein Khan Mervi. He had the condescension to converse very familiarly, and his remarks and manners are ever those of a highly polished man: he seemed also anxious to give us a public mark of his attention; for as we rode along, at two different intervals, he was presented with bowls filled with sugar-candy, of which he first took a piece himself, and then ordered that it should be given to me, and to the gentlemen of the mission and our attendants. This among the Persians is esteemed a very high mark of favour; and whilst we could not refrain from smiling at the strange custom that embarrassed our hands with large pieces of sugar-candy on horseback, there was scarcely a Persian around us that would not willingly have given his beard for a similar distinction.

During all this time I had an opportunity of observing the king, and remarking the different stages of the procession. His majesty was gayly dressed in a white close vest, embroidered with spangles. His sword, his dagger, and other ornaments, were entirely inlaid with precious stones. The bridle, crupper, breast-plate, were all either rubies, diamonds, or emeralds, whilst a long thick tassel of pearls was suspended under the horse's throat by a *cordon*

that went round his neck. At different intervals he called for his *Kalioun*, (the water-pipe,) which was brought to him by his Shatir Bashi, or head of the running footmen, from which he took not more than one whiff, which was afterwards emitted in one long white stream of smoke, which he managed to conduct over his beard as a perfume. He was dignified in all he did, and seemed very attentive to all that was going on. As he approached the town, long rows of well-dressed men at some distance from the road made low bows, and whenever he called one near to him, he came running with great eagerness, and received whatever he had to say with the greatest devotedness. He was then received by a corps of Mollahs, and *Peishnamez* (priests), who chanted forth the *Khotbeh** with all their might. Then oxen and sheep in great numbers were sacrificed just as he passed, and their heads thrown under his horse's feet. Many glass vases, filled with sugar, were broken before him, and their contents strewed on his road. Every where dervishes were making loud exclamations for his prosperity; whilst a band of wrestlers and dancers were twirling about their *mils* (clubs), and performing all sorts of antics, to the sound of the copper drums of Looties. Nothing could be more striking than the variety of the scene that surrounded the king. Amongst the crowd I perceived the whole of the Armenians, headed by their clergy, bearing crosses, painted banners, the Gospel, and long candles. They all began to chant psalms as his majesty drew near; and their zeal was only surpassed by that of the Jews, who also had collected themselves into a body, conducted by their rabbis, who raised on high a carved representation on wood of the tabernacle, and made the most outrageous cries of devotion, accompanied by the most extravagant gestures of humiliation, determined that they at least should not pass unnoticed by the monarch. On coming close to the walls of the city, the crowd of horsemen and

* This is an oration delivered every Friday, after the forenoon service, in the principal mosques, in which the Mahomedans praise God, bless Mahomet and his descendants, and pray for the king.

people increased to an extraordinary degree, and where they were confined in some places by the walls of gardens, became quite stationary. In all the bustle I perceived the king constantly looking at a watch carried by Shatir Bashi, anxious that he should enter the gates exactly at the time prescribed by the astrologers. *Id.*

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On the means of curing the Dry-Rot.

—First. Make a strong caustic solution in water of barilla, kelp, or potash, and when boiling hot, wash the parts of the wood affected with the rot. The effect of this caustic ley will be the destruction of the vegetating fibres of the fungus.

Secondly. Dissolve oxide of lead or iron in pyrolignous acid; and twelve hours after the first application of the leys soak the wood well with this solution. A decomposition of the metallic liquor takes place; the acid and alkali unite, and the oxide of the lead or iron is precipitated in the pores of the wood, and prevents the fungus from spreading.

Another way of preventing the rot is, first, to wash the wood with the pyrolignous solution of lead, and ten or twelve hours after to wash it with a strong solution of alum (in the proportion of one pound and a half of alum to one gallon of water).

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A practical Treatise on the Use and Application of Chemical Tests; with concise Directions for analysing Metallic Ores, Metals, Soils, Manures, and Mineral Waters. Illustrated by Experiments. By FREDERICK ACCUM, Operative Chemist, Lecturer on Practical Chemistry and on Mineralogy, F. L. S. M. R. A. S. R. S. of Berlin, &c. 3d Edition, 8vo. pp. 606.

We are much gratified to find that the success of this valuable little work has been so great, as already to give us an opportunity of noticing a third edition of it; and to recognise in the many elaborate improvements by which it is successively distinguished, a pleasing proof that the author is not insensible of the due return which he owes for the high share of favour which his labours have received from the public. Mr. Accum has in the present edition greatly enlarged the scale of his experiments, which are not confined to the illustra-

tion of the practical operations in the analysis of such metallic ores, metals, mineral waters, &c. as are commonly to be met with, but extend to minerals which occur but rarely, and the proper mode of analysing which, it is only therefore of so much the greater consequence to know distinctly. Two new plates have also been added, descriptive of the instruments most necessary for the analysis of bodies by means of reagents or tests. The work has upon the whole been much improved, and it is with confirmed satisfaction that we repeat our recommendation of it, as a most useful manual to every student of chemistry.

Mr. Accum has in the press, a third edition of *Chemical Amusements*; comprehending a series of instructive and striking Experiments in Chemistry, which are easily performed, and unattended by danger. With plates by Lowry.

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Society for the encouragement of industry in France.

For the application of the steam engine to printing presses.—The Society proposes a prize of two thousand francs to the person who shall put in action, by means of the steam-engine, one or more typographic presses, constructed either according to the old method, or according to any other method. The press thus worked must produce in a given time a greater number of impressions than in the ordinary way, and the clear advantage gained by it must be much greater than what is commonly obtained. The competitors to transmit descriptive memoirs accompanied with designs of the presses which they have employed, and certificates from the local authorities of their having been in active use for three consecutive months.

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Improvement and extension of Iron Rail-Ways.—The following circular letter has been addressed to the various iron-masters in Scotland and England, viz.

‘Sir,—Although the rail-way that is now in contemplation in the vicinity of Edinburgh be entirely a matter of local concern, the peculiar plan of it is certainly to be viewed in a different light, as an object that well deserves the attention of the various classes of the community throughout the kingdom. Instead of insulated patches of rail-way,

here and there, for particular purposes, and for the convenience of private individuals, as is now the case, it is here proposed, through the medium of rail-ways, to open extensive communications—to branch them out from the metropolis of Scotland in various directions, and to distant points—and thus to facilitate conveyance in general by an improved system of roads for heavy carriages.

‘The Highland Society of Scotland, have, in a very patriotic manner, offered a premium of fifty guineas for the best essay on the means of attaining so desirable an object as the introduction of rail-ways for the purposes of general carriage.

‘With a view to the establishment of the rail-way in question, for the conveyance of commodities to and from Edinburgh, and thereby to give a commencement to the system generally, a subscription for a *survey* has been opened, and plans by Mr. Stevenson, engineer, are in considerable forwardness.

‘It seems to be desirable, that rail-ways, for alternate carriage and general use, should proceed on a continual level, or upon successive levels: and a simple system of *lockage* (if it may be so called), by which loaded wagons may easily be elevated or depressed, from one level to another, would appear to be a desirable attainment. The edge rail-way is generally used and preferred in Scotland, as causing less friction, and less expense of horse power; and it would tend to facilitate the general use of rail-ways, if, by some simple change, the wheel usually employed for the road or street could be made also to suit the rail-way, or the rail-way wheel be made to suit the road or street, so that the cart or wagon which brings the commodity from the colliery or stone quarry, the farm-yard, or the manufactory, to the rail-way, might travel along it to the termination of the rail-way, and proceed from thence through the streets of the town to the dwelling of the consumer, without unloading, or change of carriage.’

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English and Chinese Dictionary.—The Rev. R. Morrison, who has for ten years been collecting the materials, is printing, at Macao, an extensive Chinese and English Dictionary, containing forty thousand characters. It will

be printed at the expense of the East India Company, who have liberally authorized Mr. Morrison to vend, for his own recompense, 650 of the 750 copies of which the edition is to consist. The three parts,—1. The Radicals or Keys. 2. The English and Chinese;—and, 3, the Chinese and English, will extend to upwards of 40 half-yearly numbers; but it is proposed that the total cost shall not exceed 20 guineas to subscribers. If, therefore, Mr. Morrison should live long enough, this great desideratum of European literature is, at length, likely to be achieved.

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South America.—The interest which is so generally felt for the issue of the great cause now pending in South America, will speedily render popular captain BONNYCASTLE’S *History of Spanish America*, which has just appeared. Modern and very recent voyages and travels have afforded much new information respecting all parts of the new world; but the books in which, the discoveries and observations of eminent travellers have been given to the public, are not only so numerous, but in general so costly, that comparatively, only few readers can obtain from such scattered and expensive sources the general results, which are so necessary to the progress of knowledge. Captain Bonycastle has, therefore, rendered a most essential service to the public by devoting his talents to this compilation, which comprehends every new discovery in geography, geology, and natural history generally, together with a judicious selection of historical matter; without reference, however, to the political questions of the moment. The work is enriched by two well-executed maps of Spanish North and South America, and an engraving representing the comparative altitudes of the mountains in those regions.

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Germany.—A considerable quantity of bones, of large size, were discovered last year, buried in the earth, in the neighbourhood of the village of Tiede, near Brunswick. They were examined by M. Dahue, who appears to have distinguished parts of the skeletons of five elephants. There were nine tusks among them, one of which was fourteen feet in length, another eleven, and many grinders, in which the enamel was arranged exactly as in the teeth of

the African elephant. A complete head of a rhinoceros, with the horn and teeth, was also found very little altered.

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THE CARACCAS.

From the third volume of Humboldt's Persona! Travels.

After having described the scenery and the atmospheric constitution of La Guayra, we shall now leave the coasts of the Carribbean sea. The road that leads from the port to Caraccas, the capital of a government of near 900,000 inhabitants, resembles the passages over the Alps, the road of St. Gothard and the Great St. Bernard. The height of Caraccas is but a third of that of Mexico, Quito, and *Santa Fe de Bogota*; yet among all the capitals of Spanish America, which enjoy a cool and delicious climate in the midst of the torrid zone, Caraccas stands nearest the coast. What a privilege, to possess a sea-port at three leagues, distance, and to be situate among mountains, on a table land, which would produce wheat, if the cultivation of the coffee tree were not preferred! The road from La Guayra to the valley of Caraccas, is infinitely finer than that from Quayaquil to Quito, or that from Honda to Santa Fe. With good mules it requires but three hours to go from the port of La Guayra to the Caraccas; and only two hours to return.

When I passed for the first time that table land, on my way to the capital of Venezuela, I found several travellers assembled around the little inn of Guayavo, to rest their mules. They were inhabitants of Caraccas, and were disputing on the efforts towards independence, which had been made a short time before. Joseph Espana had perished on the scaffold; and his wife groaned in prison, because she had given an asylum to her husband when a fugitive, and had not denounced him to the government. I was struck with the agitation which prevailed in every mind, and the bitterness with which questions were debated, on which men of the same country ought not to have differed in opinion. While they descanted on the hatred of the mulattoes against the free negroes and whites, on the wealth of the monks, and the difficulty of holding slaves in obedience, a cold wind that seemed to descend from the lofty summit of the Silla of Caraccas, enveloped us in a thick fog, and

put an end to this animated conversation.

Caraccas is the capital of a country which is nearly twice as large as Peru is at present, and which yields little in extent to the kingdom of Grenada. This country which the Spanish government designates by the name of the *captain generalship of Caraccas*, or of the (united) *provinces of Venezuela*, has nearly a million of inhabitants, among whom are sixty thousand slaves. It contains along the coast, New Andalusia, or the province of Cumana (with the island of Margaretta), Barcelona, Venezuela or Caraccas, Coro and Mara-Caybo; in the interior, the provinces of Varinas and Guayana, the first along the rivers of Santa Domingo and Apure, the second along the Oroonoko, the Casiquiare, the Atabapo, and the rio Negro. In the general view of the seven united provinces of Terra, we perceive, that they form three distinct zones extending from east to west. We find at first cultivated land along the shore, and near the chain of the mountains on the coast; next savannahs or pasturages, and finally beyond the Oroonoko, a third zone, that of forests, into which we can penetrate only by means of the rivers that traverse them. In the first zone are felt the preponderance of force, and the abuse of power, which is the necessary consequence. The natives carry on a civil war, and sometimes devour one another. The monks endeavour to augment the little villages of their missions, by availing themselves of the dissensions of the natives. The military live in a state of hostility with the monks, whom they were intended to protect. Every thing offers alike the melancholy picture of misery and privations. In the second region, in the plains and the pasture grounds, food is extremely abundant, but has little variety. Although more advanced in civilization, men without the circle of some scattered towns do not remain less isolated from one another. At the view of their dwellings, partly covered with skins and leather, it would seem that far from being fixed, they are scarcely encamped in those vast meadows, which extend to the horizon. Agriculture, which alone lays the basis, and draws closer the ties of society, occupies the third zone, the shore, and especially the hot and temperate vallies in the mountains near the sea.

If we examine the state of the captain-generalship of Caraccas, we perceive that its agricultural industry, its great mass of population, its numerous towns, and whatever is connected with an advanced civilization, are found near the coast. This coast extends farther than two hundred leagues. It is bathed by the Little Carribbean sea, a sort of Mediterranean, on the shores of which almost all the nations of Europe have founded colonies. The coasts of Venezuela, from their extent, their stretching towards the east, the number of their ports, and the safety of their anchorage at different seasons, enjoy all the advantages of the interior Carribbean sea. The communications with the greater islands, and even with those that are to windward, can no where be more frequent than from the ports of Cumana, Barcelona, La Guayra, Porto Cabello, Coro, and Maraycabo: and no where has it been found more difficult to restrain an illicit commerce with strangers. Can we wonder, that this facility of commercial intercourse with the inhabitants of free America, and the agitated nations of Europe, should have augmented in conjunction, in the provinces united under the captain generalship of Venezuela, opulence, knowledge, and that restless desire of local government, which is blended with the love of liberty and republican forms?

The copper-coloured natives, or Indians, constitute a very important mass of the agricultural population only in those places, where the Spaniards found regular governments, a civil community, and ancient and very complicated institutions at the conquest, as in New Spain, south of Durango; and in Peru, from Cusco to Potosi. In the captain-generalship of Caraccas, the Indian population is inconsiderable, at least beyond the missions and in the cultivated zone. At the moments of great political dissensions, the natives excite no fear in the whites, or the mingled casts. Computing in 1809 the total population of the seven united provinces at 900,000 souls, it appeared to me that the Indians made only one ninth; while at Mexico, they form nearly one half of the inhabitants.

Among the casts that compose the population of Venezuela, that of the blacks, is not important from its num-

ber, but it is so from its accumulation on a small space of territory. In all the captain-generalship the slaves do not exceed a fifteenth of the whole population. In the island of Cuba, of all those in the West Indies where the negroes bear the smallest proportion to the whites, they were, in 1811, as one to three. The seven united provinces of Venezuela have sixty thousand slaves; Cuba, the extent of which is eight times less, has two hundred and twelve thousand.

The sixty thousand slaves which the Seven United Provinces contain, are so unequally divided, that in the province of Caraccas alone, there are nearly forty thousand, one fifth of which are mulattoes; in that of Maracaybo, ten or twelve thousand; in those of Cumana and Barcelona, scarcely six thousand. To judge of the influence which the slaves and the men of colour exert in general, on the public tranquillity, it is not enough to know their number; we must consider their accumulation at certain points, and their manner of life, as cultivators or inhabitants of towns. In the province of Venezuela, the slaves are assembled together on a space of no great extent, between the coast and a line that passes (at twelve leagues from the coast) through Panaquire, Yare, Sabana de Ocumare, Villa de Cura, and Nirgua. The Leanos or vast plains of Calaboso, San Carlos, Guanare, and Barquecimeto contain only four or five thousand, who are scattered among the farms, and employed in the care of cattle. The number of freed men is very considerable; the Spanish laws and customs are favourable to enfranchisement.

What is most interesting in the colonies next to the state of the blacks, is to know the number of white creoles, whom I call Hispano-Americans, and that of the whites born in Europe. It is difficult to acquire notions sufficiently exact on so delicate a point. The people in the new, as well as in the old world, abhor numberings, suspecting them to be made in order to augment the weight of taxes. The men in office, on the other hand, sent by the mother-country to the colonies, dislike these statistical enumerations as much as the people, and this from motives of jealous policy.

If we compare the Seven United Pro-

vinces of Venezuela to the kingdom of Mexico, and the island of Cuba, we shall succeed in finding the approximate number of white creoles, and even of Europeans. The first, or Hispano-Americans, form in Mexico nearly one fifth, and in the island of Cuba, according to the very accurate enumeration of 1801, a third of the whole population. When we reflect, that the kingdom of Mexico is inhabited by two millions and a half of natives of the copper-coloured race; when we consider the state of the coasts that are bathed by the Pacific ocean, and the small number of whites in the intendencies of Puebla and Oaxaca, comparatively with the natives; we cannot doubt, that the province of Venezuela, at least, if not the capitania-general, has a greater proportion than that of one to five. The island of Cuba, in which the whites are even more numerous than in Chili, may furnish us with a limiting number, that is to say, the *maximum* that can be supposed in the capitania-general of Caraccas. I believe we must stop at two hundred, or two hundred and ten thousand Hispano-Americans, in a total population of nine hundred thousand souls. The number of Europeans included in the white race (not comprehending the troops sent from the mother-country) does not exceed twelve or fifteen thousand. It certainly is not greater at Mexico than sixty thousand, and I find by several statements, that if we estimate the Spanish colonies at fourteen or fifteen millions of inhabitants, there are in this number, at most, three millions of creole whites, and two hundred thousand Europeans.

It seems to excite surprise in Europe, that the Spaniards of the mother-country, of whom we have remarked the small number, have made during ages so long and so firm a resistance. Men forget that the European party in all the colonies is necessarily augmented by a great mass of the natives. Family interests, the desire of uninterrupted tranquillity, the fear of engaging in an enterprise that might fail, prevent these latter from embracing the cause of independence, or aspiring to establish a local and representative government, though dependant on the mother-country. Some shrink from violent measures, and flatter themselves, that a gradual reform may render the colonial system less oppressive. They see in

revolutions only the loss of their slaves, the spoliation of the clergy, and the introduction of religious toleration, which they believe to be incompatible with the purity of the established worship. Others belong to the small number of families, which, either from hereditary opulence, or having been long settled in the colonies, exercise a real municipal aristocracy. They would rather be deprived of certain rights, than share them with all; they would prefer even a foreign yoke to the exercise of authority by the Americans of an inferior cast; they abhor every constitution founded on an equality of rights, and above all, they dread the loss of those decorations and titles which they have with so much difficulty acquired, and which, as we have observed above, compose so essential a part of their domestic happiness.

St. Thomas, in Guiana, will be necessarily, at some future day, a place of trade of high importance, especially when the flour of New Grenada, embarked above the confluence of the Rio Negro and the Umadea, and descending by the Meta and Oroonoko, shall be preferred at Caraccas and Guiana to the flour of New England. It is a great advantage to the provinces of Venezuela, that their territorial wealth is not directed to one point, like that of Mexico and New Granada, which flows to Vera Cruz and Carthagena; but that they possess a great number of towns equally well peopled, and forming so many various centres of commerce and civilization.

The climate of Caraccas has often been called a *perpetual spring*. It is found every where, half way up the Cordilleras of Equinoctial America, between four hundred and nine hundred toises of elevation, unless the great breadth of the valley joined to an arid soil causes an extraordinary intensity of radiant caloric. What, indeed, can we imagine more delightful, than a temperature, which in the day keeps between 20° and 26°; and at night between 16° and 18°, which is equally favourable to the plantain (cambury), the orange-tree, the coffee-tree, the apple, the apricot, and corn? A national writer compares the situation of Caraccas to the terrestrial paradise, and recognizes in the Anauco and the neighbouring torrents, the four rivers of the garden of Eden.